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Volume 5, Number 6 **June, 1967**

ON THE COVER — As pictured in the artist-mind of Jon Dahlstrom, this is the future . . . high-speed road racing, with radio control and gas power. Now turn to page 18. This is today. And when you see what's already happening, you'd better believe that the future won't be long in coming!

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model mail

HE WANTS TO SCRATCH

I have just taken a subscription to your excellent magazine. Now I'm interested to the point where I want to start buying tools and doing some scratchbuilding. Could you please tell me what I need, and how to go about constructing "scratch" chassis? Thank you.

Kent Sogge
Hopkins, Minn.

We sure can, Kent. This issue has quite a bit of information on the subject, as you can see. Scratching is one of the most enjoyable aspects of the model racing hobby. Driving is fun, but building is where a lot of us really get our kicks. You will too. Welcome to the club.

SMILE WHEN YOU SAY THAT PODNAH!

I am one of a grand total of three members of a slot racing club, "The All-American Racing Team." We run all stockers. I firmly believe one of these "heavy" stockers could obliterate a Western GP machine (or "feather," whichever you prefer).

I would also like to know if there is anyone in the area of Livonia who would like to join our crusade against the braggarts of the West. If so, contact me at the address given.

I read your magazine, and enjoy it, despite the obvious "siding" with the west.

Bob Slater, A. A. R. T.
32430 Bertram
Westland, Mich. 48184

A quick poll of our tech editors has resulted in your quick conviction, Bob, and you will therefore promptly report to the lion arena! All of the thumbs were down, we are sorry to report. As much as we love stockers, the thought of putting one against the "super screamers" that run here on the California tracks, is too horrible to contemplate. You would, honestly, have no chance whatsoever. This is not to say that stockers are not fast (the real stockers are fantastically fast at places like Daytona, etc.) but you're just travelling in the wrong company when you pick on a GP machine. We're not just talking about a western GP car, Bob, we're talking about any well-constructed GP or Sports racing machine. The midwest and east have plenty of them too.

GIVE THIS FELLOW SOME HELP, GUYS

I'm writing a term paper entitled "The Pros and Cons of an Inline versus a Sidewinder Slot Racing Chassis" (whew!). I would like to ask if you would please publish this, and ask your readers if they would please send me their opinions on this topic. Your mag is great.

Robert Fialkowski
5155 No. Lotus Ave.
Chicago, Ill. 60630

We've printed your full address, Bob. Good luck. Incidentally, you can find a great deal of info on this subject in the 1967 MODEL CAR RACING HANDBOOK, available on your newsstand, or send $1.00 to Delta Magazines, 131 S. Barrington Place, West Los Angeles, Calif. 90049.

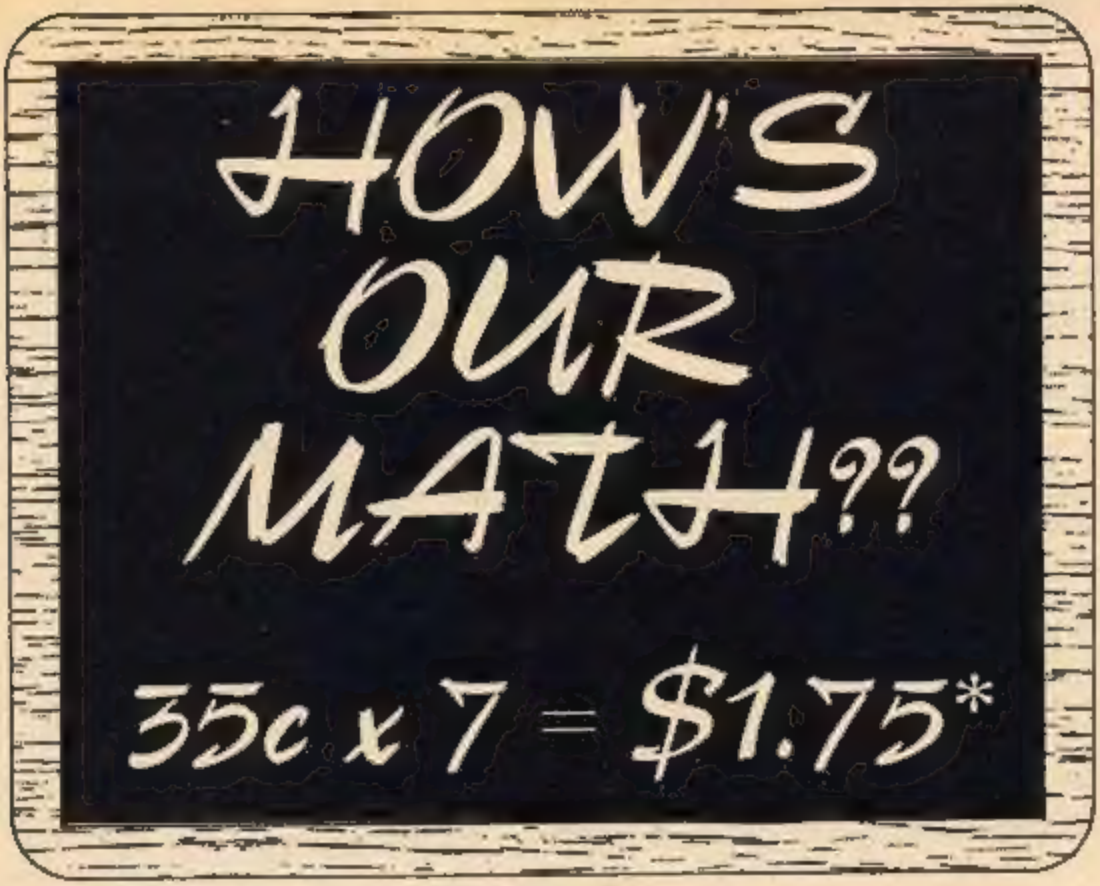
DEAR SPEEDY . . .

I would like some advice from you on rewinding a 26D motor. I would like to know how many turns of #29 wire for a really hot motor? Another question, what is a good gear ratio for the 26D?

Would you please do an article with diagrams for building a scratch tube chassis for the 26D? Last but not least, would you make chassis and send them to people if you were paid for it?

Mark Epstein
Huntington Station, N. Y.

All of your answers can be found in this issue in the article titled "The Frame Game," Mark. Unsmartly, Speedy will not build chassis for money, as he's too busy out racing! You'll have more fun if you build them yourself anyway.



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IS IT A BARRACUDA?

Your mag is the greatest and it has solved many of my slot car problems. But now I need some direct info on this one. I own a Monogram track. Most of the cars are Monogram with the exception of a few Revell cars. My Revell cars fishtail on the turns and lose speed and time. Even at slow speeds, the tails still spins out. Should I place a weight in the rear? Where and what are the best weights I can buy?

Tony Marciani
New York, New York

Your fishtailing problem may be caused by several things, Tony. First try running the Monogram tires on the Revell car. If this doesn't work then you may have binding on your front axle. Check to see that it rotates freely, and the guide shoe runs freely in the groove and the front wheels roll on the track. If all else fails, then a flat lead weight can be contact-cemented to the rear of your frame. Monza Accessories, P.O. Box 3315, Van Nuys, California, has some nice 3/32" weights for only 5 cents.

HERE'S WHAT WE'RE LOOKING FOR

I have seen the Model Of The Month contest in my MCS issues, and would like to know how to enter. Please state the fine points that the judges are looking for, so I have the best opportunity to make a good showing.

Martin Kukla
Garfield Hgts., Ohio

A good question, Martin. We get a lot of letters asking how to enter, but very few asking how to win! Here's how you enter. Send a black and white glossy photo (no color) of any size, to The Contest Editor, MODEL CAR SCIENCE, 171 South Barrington Place, West Los Angeles, Calif. 90049. Include a brief description of the car, and what you have done to it. We're looking for good paint jobs, attention to small details like smooth body seams (if the car has been puttied), close-fitting body panels (if the doors have been modified so they open) engine wiring (if the motor shows) and similar items. Plus some imagination!! It's that little bit of extra effort that the builder puts into his model, that can win for him.

Remember, the best car in the world won't win if we don't receive a sharp black and white photo. Hold that camera steady, and take the picture in good light. Don't take it in direct sunlight, it's just too harsh. Open the door to your garage and place a table in the shade of the door, on a bright sunny day. This is called "open shade," and it's the best lighting in the world. Don't get back into the garage, however, as it will get too dark. Shade under a tree is just as good. Hold the camera steady. You won't be able to get closer than 3 feet with a normal camera, however, as the lens won't focus closer than that. Check with your local camera shop to see how much he'll charge you to "blow it up" a bit larger. If he wants too much, just take the picture at 3 feet, and send it to us. If it's in focus, we'll blow it up for you!

FUNNY CARS!!!

(Wouldn't you know MPC would have models of ACTUAL CARS?)

COLOR ME GONE

Here's Roger Lindamood's famous Funny Car in 1/25 scale with an authentic tubular rail chassis! You can set this baby up as either a front seater or throw the engine in the front seat and move the driver to the rear! It's got the big Hemi 426 with stacks, complete racing interior including roll cage, rear spoiler and front air foil, one-piece hollow slicks (an all-time first!) and a bonus paint and brush set!

MR. UNSWITCHABLE

Dick Jesse has outdone himself with this wild funny one! The driver actually looks out over the roof! Really unreal! And the Pontiac 440 cu. in. engine dumps up and over the rear slicks (And they're one-piece vinyl slicks, too!). Add to this the spectacular interior sets, rail chassis, driver figure, roll bar, parachute and you've got the most unusual and famous Funny Car on the strips today!

MPC

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Q modelers' QUESTION SESSION

Q How do you paint the lettering on sticks white without fouling them all up?
DAVID FRAZIER
Grandview, Mo.

A *There are two easy ways to solve your lettering problem, David. The first is to use the white plastic tires supplied with AMT kits. Spray the tires with flat black paint, and then, when it dries, lightly file off the black paint from the raised letters. Another method is to let your paint sit on a piece of glass until it has the consistency to avoid running. In this method time, patience, and a bit of skill are all needed.*

Q Could you tell me if any model company makes a model of a Willys pickup.
DARRELL FREEMAN
Georgetown, Texas

A *No one to my knowledge has a Willys pickup, Darrell, but Revell does make the Stone-Woods-Cook Swindler II. This 41 Willys would be a great start for an original custom pickup.*

Q In your April '67 issue, on page 48, you show a Corvette interior. I want to know how you painted the dials so well. I have never been able to paint that well in five years of building Corvette's.
KEVIN SAUSE
Ft. Lauderdale, Fla.

A *Because the letters or numerals of the instruments were already raised, I just put a light coat of flat black paint over everything, waited for it to ALMOST dry, and then just touched the tops of the numbers with a wooden toothpick. This will remove the paint from the numbers and give you a real sharp dash panel.*

Q I would like to know how to wire an engine compartment. I don't know where to hookup and connect anything. I have several models I want to enter in your contest, but not one of them has a wired engine. Can you help me? MCS is a boss mag, I'd rather fight than switch.
EARL WILLIAMS
Montclair, Calif.

A *As you apparently know, Earl, nothing looks less realistic than an unwired engine. So, in reply to hundreds of letters like yours we printed an article in the May 1967 MCS "Detail for Real" section that ought to give you something under your hood to be proud of.*

Q I need help. I know I can order sheet styrene from Auto World, but how much will this cost? Also how thick should it be. Could you tell me where I can get a Corvette Sting Ray anywhere between the years 1960-1964. Thank you for any help you can give me.
DAVE WERNICKE
Racine, Wisc.

A *It's hard to say what thickness you should use because you haven't said what you are going to do with it, but you should be safe with .040". Order it from Auto World, Box 961, Scranton, Penn. 18501. A 6½" by 10" sheet will cost 35 cents, while the 3¼" by 6½" sheet is just 15 cents. Chevrolet started production of the Sting Ray version of the Corvette in 1963. Auto World should also have a stock of these kits.*

Q I think you have a "groovy" mag. Keep up all those great "Details for Real". I use them all the time. Could you tell me if there is a 1/24th scale Jeep model made, and if so, where can I get one. Also, is there anyone making balloon tires. I'm planning to build a Dune Buggy.
KEN FREEMAN
Chino, Calif.

A *Monogram's military series includes a Jeep of undisclosed scale which looks as*

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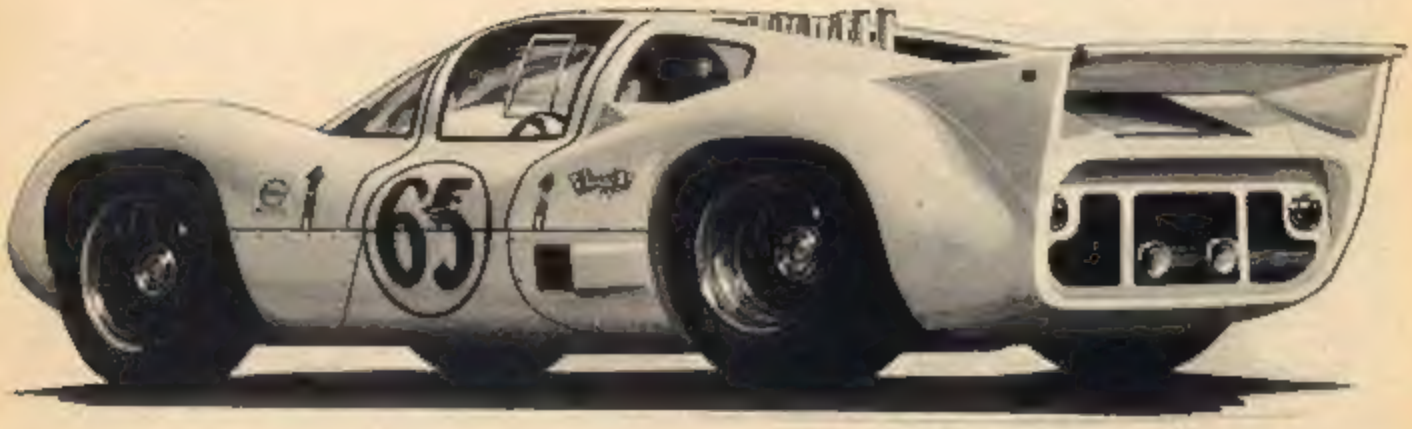

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Monogram Models, Inc.,
Morton Grove, Illinois

Monogram model racing

though it could pass for anything from 1/32 to 1/25. Auto World doesn't list it in their catalog, but they can probably get ahold of one for you. In regard to your "dune buggy" project, AMT will soon release dune buggy kits in 1/24th scale that will solve your tire problem.

Q Where can the Volkswagen kit (IMC) and Monogram's Little People (April '67) be found? Also, is Aurora Plastics a Canadian or U.S.A. company? I understand that the Canadian branch is only a subsidiary of the main office in the U.S. Could you please tell me for certain? Your TIPS articles are great!
SCOTT DOUGLAS
Georgetown, Ont., Can.

A *You should have no trouble locating either the IMC VW kit or Monogram's "Little People". They are new but should be in your local hobby shop by now. Aurora's Canadian company is a division of the New York company.*

Q How do I start my father on model building? He likes cars and I think he would like building models too.
RENE LAUZON
Penetanguishene, Ont., Can.

A *This is an unusual question but one that should be easy to solve. First you should buy a kit that you think Dad might like and start to work on it. Then ask Dad to help you. Now sit back and watch him take over. Presto —you have him hooked on this really great, and relaxing hobby. Good luck!*

Q Which company makes the Flat Aluminum paint that you are always talking about? Can I order it from Auto World?
DOUG WHITE
Elkhart, Ind.

A *Pactra Flat Aluminum paint should be very easy to find as it is one of their regular 15¢ jars of paints. It is a standard paint line that most hobby shops or department stores carry, and they should have this color. The flat aluminum is a color that any model builder CANNOT DO WITHOUT. The Auto World catalog does not list the 15¢ jars of paint.*

THE H.O. RACING SCENE has taken a definite turn for the better just recently. After brief negotiations, the only H.O. organization in the country, HOCCI, (H.O. Competition Cars International) merged with NAMRA, (North American Miniature Racing Association) the finest big scale club in the country. This was reported in this magazine in the last issue.

What has happened since then, however, has warmed the hearts of those of us who care about the future of the slot racing sport. The response to our little news blurb in the last issue was overwhelming, according to NAMRA Secretary, Jose Rodriguez. New members are flocking into the fold, and the organization is growing in leaps and bounds.

You faithful H.O. buffs who joined HOCCI early, when it struggled to get on, and remain on its feet, are to be commended for your patience and faithfulness. It's beginning to pay off handsomely. You fellows who are just learning of this great H.O. organization can do something about it right now. Send your $2.00 annual dues to *HOCCI, C/O NAMRA, P.O. Box 578, Times Square Station, New York City, N. Y. 10036.* You'll get a rulebook that alone is worth the money, plus many other benefits. The NAMRA people are cooking up so many things right at the moment that the picture is changing rapidly, so just get your money in and hang on for a fast ride! You'll never regret it, I promise. Yes, ol' Speedy is a member!

The lightweight vs. heavyweight thing is breaking out again. For our next issue we're

cooking up a rather interesting article on the subject. The best way to prove which car is the best, is to build a pair — one light, and one heavy. They don't have to look exactly like the ones in the article, of course. Go ahead and use your own imagination. It's more fun that way, and you'll learn faster too.

There are probably very few enthusiasts who own a stop watch. However, it's a valuable tuning device, and if you can possibly swing one, by all means do so. Used ones aren't too expensive. All the static tuning in the world won't replace that final, tell-all test of running the car on the track. The stop watch won't lie to you. Without it, you can be fooled easily. A noisy car can be very misleading, and it's difficult to tell actual lap times because of the howl of the thing running around the track. The watch will give it to you straight, as it can't hear and be misled! Try to buy one that offers the greatest number of increments between seconds. Since few tracks take over a 10 or 20 second lap time, you can see that you don't need one that goes to a minute, or hour.

Here's my tip of the month. Instead of attaching those beautiful, narrow Formula I or Indy bodies to the chassis by means of screws, why not just lay a strip of two-sided adhesive Scotch tape along the frame rails. Then slip the body over the chassis and press the sides against the outer side of the tape. It'll hold securely, and it will even kill some of the plastic body vibrations that are so common. And there won't be any holes in the body either, if you're scratchbuilding your chassis and using a new body shell. For that matter, even if you modify an existing car this way, the holes that are left in the body from the body screws will hardly be noticeable.

The new Cox La Cucaracha chassis kit should spark a lot of interest with scratch builders. That's a popular chassis, and for good reason. Now you can drape whatever body you want over it. Their complete chassis kit sells for $4.95, and has everything but a motor. Or you can buy just the frame, for $1.49! Add your own goodies and go out and get into the thick of things! Both of these frames have extra body tabs added on, to take clear plastic bodies other than the Cucaracha shell.

Want a groovy looking montage of Chaparral photos, for your den or racing room? Get it from Cox, for just a buck! It's a big 20" x 25". Send to L. M. Cox Mfg. Co., Dept. A-82.0, P.O. Box 476, Santa Ana, Calif. 92702. Tell 'em Speedy sent you. It won't save you a dime.

Strombecker's latest 1/32 cars are going to make you drool all over your hand controller! Hear this: A Ford "J" car, McKee, McLaren MK II, 2-D Chaparral coupe, Porsche Carrera "6," and a Ferrari 330P2, in addition to their other beauties that already grace their line, like the Ferrari Dino, Cheetah, etc. The new cars cost $8.00, which makes me frown a bit, but they're worth it.

The cost of slot racing seems to be creeping steadily upward. 1/32 machinery for instance, has gone from $5.95 up to $8.00, which is a pretty wild increase in just a year or two, in my opinion! The one redeeming feature, however, is the new car's ability to withstand severe punishment, thus lasting a long time. If you take care of your cars, they'll be around a long, long time.

I'm interested in seeing how Strombecker's little brutes will compare with Monogram's marvelous Lola T-70, in 1/32 scale. This T-70 is truly a great car, one of the best home scale cars I've ever seen. Hoy will disassemble you, and open you on the dotted line if you try to pick up his newly finished Lola T-70! He sure is protective about that thing!

I'm a little stunned from gazing too long at Classic's new "Serpent" and "Gamma Ray." Both cars are extremely well designed, and though I don't dig way-out cars too much, I have to say that I like these just because of the business-like way they settle themselves on the track, and hustle around in minimum time! And that new brake system is really clever. I watched one of the Classic test drivers bust around their huge test track at the plant, and walked away with my head hanging low! Put me to shame!

Enough already! It's tough to type with four fingers on each hand! My thumbs are useless, you see, because they are formed into "hooks" from those 24 hour enduros! See you next month.

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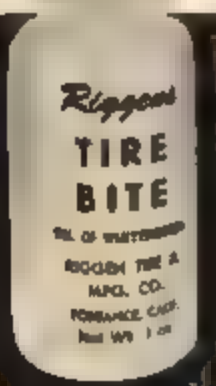

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SPEED & TECH

SOME HOT NEW COMPETITION FOR THE 26D

The title of "the hottest" stock can has lately shifted from the Strombecker Hemi to the Mabuchi 26D and has caused a bit of a stir from some other motor importers.

American Russkit, having discontinued the 23, and unsure of the future of the 25, has turned out two new cans along conventional lines. The Russkit 27 is a Hitachi, like the Atlas motors. It's wound with about 60 turns of #30 wire and has been roughly dynamically balanced. Chosen to take the place of the 23 in both kits and RTR's (like the new Honda), the 27 is a real stormer that should do well in the rewind class as well.

Another new Russkit entry is the 28. A Hemi-type motor, the end bell has been modified for use in all the old 23 brackets. Wound with #29 wire (my unit was a prototype with 60 turns), the stocker was able to jet with fast rewinds and the Dynamic G.E. torquer. It's gold and black, like the 27, mounted with small screws, and should cost about $4.00 to $4.50.

Testor's, yet to have an original import to itself, has already released its Turbo Mk III. The cheapest Hemi ($3.50), the Mk. III is actually the nicest. The big difference is obvious; an arm brush set up replaces the undersized spherical units of the other Hemis. The alloy unit is screw mounted for ease in removal and has plenty of ventilation. If this doesn't put the pressure on Mabuchi then the new Globe and Champion motors will

Globe has a 16D-sized can with all the quality and power of their screamer; while the Champion of Chamblee people have a 16D with adjustable timing and Arco's that are radiused for a small can, complete with shim. Neither company had any samples as of yet, but

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both motors are coming from quality backgrounds.

SPEED AND THE CONCOURSE CAR

Now that even we dreamers have given up on trying to win races with Concourse machinery, we still want to have something to do with the SCALE slot car Apparently the only thing left to do is to run in 1/32 scale on club tracks against other concourse cars. The last major race I've won with a really fine concourser was the L.A. regional in 1965. Now as I prepare my car for the upcoming GT event in the west coast pro series I'd like to think I wasn't copping out on my detail minded subconscious; but it's my belief that if you aren't going to race a car then you ought to put it on your shelf and just stare at it. I hereby surrender or at least yield to the evils of high speeds. Concourse may not be dead, but it's not winning any races.

A SLOT RACING OBITUARY

Western Raceways is gone. California's and probably the World's, first big commercial raceway has closed. A lot of old time racers in this area will twitch a sad thumb at the loss of the track where so many of us got our introduction to the sport. Vi, the owner and manager of Western, is now working with me at American in Hawthorne; but things just won't be the same without that twisty little course.

BODY BUTCHERING

Stock bodies just don't seem to handle well enough for the pros; some of us are pretty picky. The natural thing for every one to do is to run out and grab a body and cut a 1/4 of an inch or more off the bottom. (???) Then it's standard procedure to flare the fender wells out and make bubbles here and there to clear the pick-up post and gear. The technique will probably get further attention in this column next week, but the results are often really gross. When they made their first pro appearance at the J&J race, Jim Russell of Russkit nearly blew his cool. Team Russkit was forbidden to even consider running them, and the sponsorng company has since altered its rules to try and put an end to this ridiculousness. Come on fellas. No one expects you to run concourse cars, but this can never work out.

HEY! HEY!

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ALL YOU HAVE TO DO IS BUILD A MONKEE MACHINE ANYWAY YOU WANT IT . . . STOCK, SCRATCH-BUILT, OR CUSTOM. THEN PAINT IT UP AS WILD AS YOUR MOD MIND CAN HANDLE. GO OP, POP, FOG, FLAME, OR MAYBE EVEN PAISLEY! JUST MAKE IT SO "IN" THAT IT'S INDUBITABLY "OUT-A-SIGHT". RUSH US A COLOR PHOTO OF YOUR VERSION OF THE BOSS BUGGY, AND YOU'RE IN ON THE ACTION!

CONTEST CLOSES MAY 31ST, 1967. ALL PHOTOS BECOME THE PROPERTY OF MODEL CAR SCIENCE. SEND YOUR ENTRIES TO: "THE MCS MONKEE CONTEST," 131 BARRINGTON PLACE, WEST LOS ANGELES, CALIFORNIA 90049

THE GALLOPING R/C GASSER!

By Charles Eckles

From a standing start, this Radio Controlled speed machine can hit 35 mph without really trying, turn on a dime and give you the closest feel to real racing.

The origin of the R C Gasser goes back about two years ago. While working in the research and development shop of a local slot car manufacturer the "shop talk" turned to the possibility of a radio controlled GAS POWERED model car

This conversation brought up mostly unanswerable questions such as, how large, or better yet, how small could it be? Would it have to have a clutch? Brakes? Suspension? Would the same radio control equipment that is used in R/C planes operate a car? How many servos would it need to start, stop, and to steer a gas powered car?

Real food for thought? But you can't do a jo by just thinking. So sometime shortly after all this started, I was able to take a couple of months off work to spend full time on the project which had all the questions and no answers. It was a chancey gamble; but it paid off

The first approach was to get a prototype operating in any manner possible and then proceed to change, modify, correct, rework, and rebuild. And not having any information or standards as reference regarding an R C car I had to and did make all the mistakes myself

For the first car, I decided to use the Monogram 1/8 scale Jaguar for reference; this would establish such things as wheelbase, tire size, tread, and also give me a working body to start with. The first chassis was constructed of 1/4" brass tubing soldered together with Allstate #450 soft silver solder

The front suspension "A" frames were fabricated from some special window shutter hinges, and a simple piano wire torsion bar suspension installed. Spindles were steel tubing and aircraft bolts silver-soldered. As it turned out, this suspension was very realistic and effective, but most impractical to repair after a forcible contact with a concrete curb.

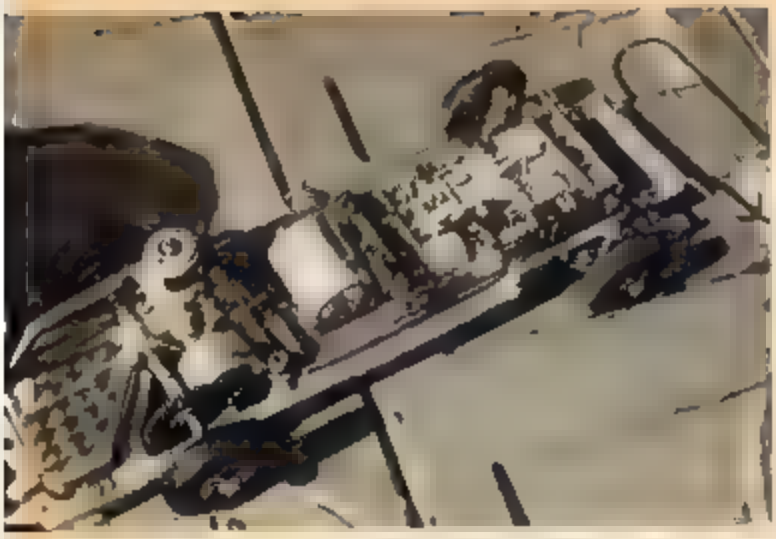
The first engine was a McCoy 35 RC. It was installed just forward of the rear axle in a conventional side-winder position. After considerable research into the possibility of starting the engine by using a battery powered starter motor from a Honda 150 or an outboard motor, I reached the conclusion it would not be practical because of cost and complexity. And I didn't care for the method of starting the engine with a lanyard such as is used on power boats.

The end result was that I found, with the proper gear ratio and a combination clutch-dog mechanism, that I could start the engine by revolving the rear wheels. At engine idle speed the clutch would run free and as engine speed was increased the centrifugal action would begin to revolve the rear wheels through the spur gears.

Now for the radio control. At the time this car was being developed, the only true proportional radio control equipment available was being manufactured for flying model airplanes. In addition to having more channels then were necessary for my use, they were (and still are) rather expensive. However, this was all that was available, so I decided to use a "four-channel proportional" system.

I contacted Cliff Weirick, who among other things is the new president of the Academy of Model Aeronautics, one of the nation's best R/C flyers, and the owner of the Proportional Control Systems, Co., in Los Angeles. Through his cooperation I was able to get the use of some the finest R/C equipment available.

With future cost in mind, I designed the car to operate with only two servos. The forward (steering) servo, receiver, and the rear (engine-brake) servo, were all attached to a veneer panel which is removable for cleaning and service. Dubro Kwik-



The R C gear used, the P.C.S. Digital System, is one of the finest rigs available. It includes two servos, receiver, and battery pack, mounted here directly to a 3 32" veneer pallet.

Both servos and the receiver were specially mounted in the clear plastic case for display purposes. The large cylinder on the left is a powerful "nicad" battery.

Links were used to complete the installation.

The next problem to be overcome was that of wheels and tires. The plastic wheels and composition tires included in the kit would definitely not be practical, so I turned out a set of prototype wheels of aluminum. The tire problem was temporarily solved by the use of ¾ inch sponge rubber sheet. I cut out a tire with a proper size hole-saw. The inside diameter of the tire was cut smaller than the outside of the wheel, so that the tire was stretched to install for a tighter bond. These tires were then trued up on a drill press.

When this whole combination was finally completed and assembled, it was time for some test runs which were attempted in the drive-way and street in front of the house. After many adustments to steering, brakes, and throttle, I began to get a semblance of control.

Much of the steering control was my own fault. As I was a real novice at R C, I never had any experience at driving a car *toward* myself! Driving away was fine, but when you turned the car and it was coming toward you, you have to think fast as to what's right and what's left.

This first car was a real TIGER and fully capable of doing a wheelie; it came on with such a fantastic performance that I lost control immediately and had to stop the car each time.

Now I was ready (I thought) for the final test or the "Moment of Truth." A full size parking lot, with enough room to really open up.

Not being overly endowed with intestinal fortitude, I went around behind a local shopping center to the rear parking lot where there were just a few cars and fewer people.

The little car behaved beautifully and in a short time it was the center of attention for a growing audience of youngsters and adults. As I became braver, I drove faster and soon became drunk with power until on a particularly tight turn the car hit a small depression and rolled and rolled and rolled. Five times! This was the finish of the plastic body;

Steering uses a rack and pinion setup, controlled through the forward servo. The wire loop up front works as a protective bumper

The chassis is formed of stainless steel, and uses hand-built independent front suspension. The tires are semi-pneumatic 2¼" Veco's.

The rear servo controls both the throttle and brake The engine is a Cox Medallion .15. The rear axle ratio is 12 56 with the 56 tooth gear as large as clearance will permit.

The hand-built centrifugal clutch, an original design (patent pending), is what makes the racing possible . . . from a standing start. It engages as the engine speed is increased.

but luckily there was very little other damage except to my ego.

At about this period of development, many things seemed to indicate that it might be better to scale down the entire vehicle as there seemed to be ample room for the R/C equipment. After some shopping around, I located a 1/12 scale Wen-Mac Mustang at a local Ford dealership. This was it; so I proceeded to make a sheet metal chassis, using the same general configuration as that of the earlier larger car (except that I used the Mustang for scale references). This time considering cost, cooling, and power I decided to use the Cox Medallion 15 engine. A few modifications later, (some of which might be new to the Cox Co.), I had this little jewel so that it would carry the exhaust and excess oil overboard. More about this engine modification later.

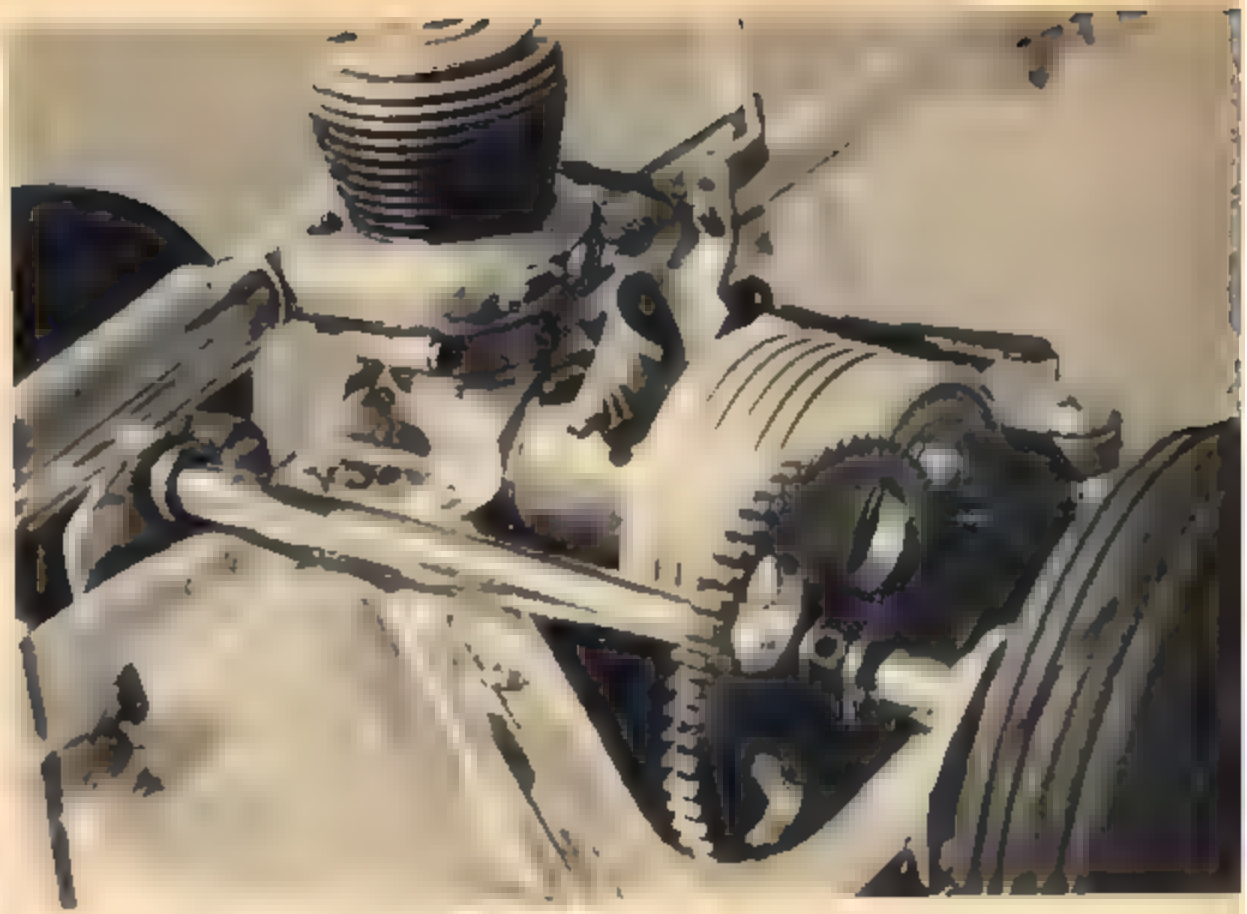
The final gear ratio selected was 12 56. There were two main factors involved in this selection. First the ratio could not be too high or it would not be possible to start the engine with the rear wheels. Second, the main drive or driving gear could only be so large because of ground clearance as it was mounted directly on the rear axle.

Again sponge rubber tires were used and they did not give very good mileage, particularly at high speed cornering. Veco 2½ inch semi-pneumatics were tried and proved to have good traction and much longer life.

The vacuum formed butyl-acetate body is a story in itself which I will go into with more detail in another article. It proved to be most practical as it will stand abuse, is repairable, and can be painted and detailed to the individual desires of the hobbiest.

The PCS radio gear was installed in this chassis and has proven to be very reliable after many hours of vibration, dust, oil, and all of the other adverse things that are suppose to affect radio equipment. And as I mentioned above, this highly sophisticated gear is more than is needed. But, the fine control level makes for some really sweet driving. In addition to being very smooth, the acceleration and speed are completely variable from idle to full open at 35 mph!

With the exhaust deflector-muffler combination, the rig is quiet enough to be run indoors at low speeds. But the real thrill . . . and the future of a coming sport . . . as I see it, is in full-bash, outdoor road rallying. Sure the cost right now is rather heady, but so is that for R/C flying and boating. And neither of these two R/C sports have anything near the blood-n-guts thrill of wheels-on-asphalt. And lastly, if enough of us are really interested in an organized R/C-Gas racing sport, the price is bound to come down . . . don't take just my word for it; go ask the Japanese, they're already making plans!



Part of the throttle control is used as a collector ring for exhaust and excess oil. The carburetor spray bar was reworked for better idling.

Starting the Gasser is simplicity itself. The initial spark is taken from a starter battery. The clutch engages to turn the engine, then disengages so the engine can idle.

Since hard plastic bodies can't handle crack-ups at 35-40 mph, flexible and tough clear shells were hand-made from .060 butyrate-acetate, vacuum-formed over a plaster model.

During the MCS Gas Rally one of Man's best friends with a taste for plastic went for the Gasser But the R C machine did high speed circles around the confused canine No contest!!

THE FRAME GAME!

Four Scratched Frames for Speed

BY CHRIS CHAN

IF YOU'RE THOROUGHLY FED UP with the kit and ready-to-run route then it's time you checked in with some tips from the scratch builders. Building with brass and piano wire has a lot of definite advantages over the typical "over-the-counter-type" of frame; *if you know what you are doing*. Take into consideration the requirements of your driving style and ability, along with those of the course you run on, and combine it with the hints in this article and you should have little problem scratching up a smooth handling slot car on your first try.

Undoubtably the most important factor in building from scratch is the ability to solder well. I use Sta-Brite silver solder for excellent results and super strength. For the best possible results, polish all the frame rails with steel wool and put a drop of flux on the joint before heating it up. A standard Weller Expert soldering gun has more than enough heat to allow for a smooth running flow of solder. After the joint is soldered, rush over to some running water and scrub it vigorously with an old tooth brush. This will remove the flux that has not been vaporized. If the flux is allowed to stay on the frame it will soon eat into the soldered joint and the frame making it unrepairably corroded. A look at the frame in the photos shows how the solder was allowed to seep evenly into the joints for the most strength and how very little solder lies outside of the joint.

Practice a bit on some scrap brass if you are still a little unsure of the quality of your job. After you have that down pat you're ready to start thinking about your frame. The chassis itself has three different and important specifications; *length*, *weight*, and *flex*. The handling of the frame will depend on how these factors are set up. Four frames are examined in the article, one of which has its construction followed from the ground up. Each is built for a distinct use on a certain track to run a certain way.

And if you also have a concourse hang-up, K&S has an exclusive line of nickel plated tubing, rods, etc., that shines like chrome. Used in connection with Sta-Brites silver solder and then polished, the appearance is easily unbeatable. Some stores have been a bit short on the supply; if this is the situation in your area you can write direct to: K&S Engineering, 7517 South Halstead Street, Dept. MCS, Chicago, Illinois.

The first frame fits into a Formula 1 3-liter Ferrari. Designed basically for a stock Russkit 28 running on a smooth, fast track, there was little need for a drop axle or independently rotating front tires. Because the track is smooth the chassis needn't be too heavy and the fallaway guide drops just a scant 5/8" to its limit. For the fast sweeping turns of the raceway, it was far easier and quicker to have loose flexing for cornering traction. For this purpose, the six 1/16" brass rods were all made to meet closer to the center of the front axle than usual. The closer-in, the more flex; the farther-out, the less. Although some flex was determined as necessary, I still didn't want the frame to twist about wheever it felt like it, so angled braces, which doubled as frame rails, were used to strengthen the chassis.

The car was made on a four inch wheel base, three inches wide for maximum turn control. Longer cars are said to handle better according to the local pros, but some short wheelbase bodies make considerably nimbler and more responsive cars.

The long cars do offer one big advantage on the rougher tracks as they allow more room for a longer fallaway arm and have a front end that is harder to lift under acceleration (like a dragster). The #29 wire stock Russkit had no trouble at all hauling the frame around, but for a regular Hemi, tubing may be substituted for the rod. A slight lift was encountered during subsequent tests so a small lead weight was affixed to the drop arm.

The next two frames are for sports and G.T. cars running on the American type tracks. The only real difference other than the size of the frame rails is that the G.T. is slightly heavier to offset the extra weight of the coupe body, and it also has slightly less flex. The rigidity of the lighter frame is achieved by using wire filled 1/16" K&S tubing bracing as many things as possible. The inner rail starts by stiffening the U-bracket, then moves laterally to brace the perimeter, then in again for the drop arm and then finally straight forward to hold the pin wheel axle. The only other frame rail runs along the body perimeter to cut down on vibration.

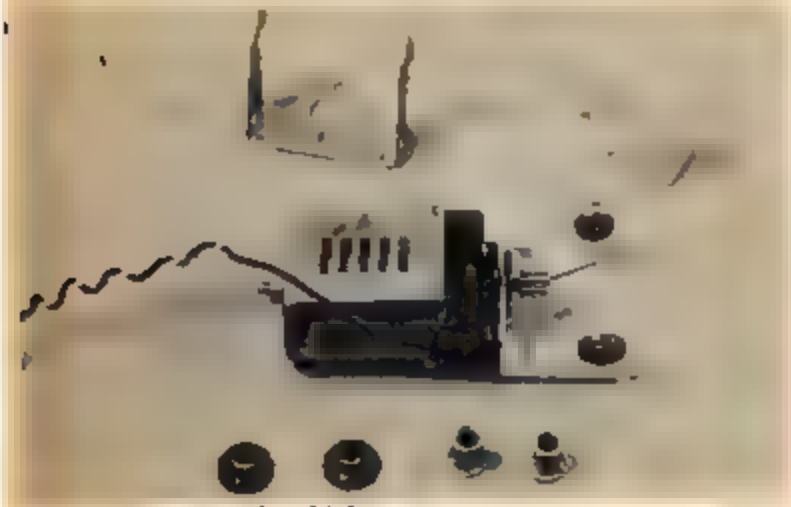
Despite its light (two tubes) weight it is as rigid as any car I've ever run. The second car is slightly longer and quite a bit heavier. Actually the triple rod affair is scheduled for production by the Fas-Trac tire people. The flex is just about perfect for the American type 150 tracks with the high bank, dog-leg, and doughnut curves. It has its tubes soldered as far outward as possible to limit its flex, so tail-out drifting is excellent. On this type of track it's often far better to be able to hang out the tail of your car and power through then to get a lot of traction because of flex and not be able to slide. This is, however, a matter of personal like or dislike. With sports and G.T. cars, the weight, combined with rigidity and extra horsepower has some drivers zeroing in on the track records.

The last frame is a stiff formula car setup for the new Russkit Honda 3 liter. Planned for use with a rewound 26D on some twisty course with a few very long straights, the innermost rail is a very sturdy 3/32nd" brass rod. To cope with the dozen or so banked, or high speed curves the

outer 1/16" rods bend to meet the front axle as far laterally as you can get. Later it was found that the car was a bit too heavy for the high speed course, so with some lead ballast on the guide arm, it was ready for one of the infamous monster Revell raceways. Revell courses are noted for humps and dips that can derail almost anything, but this frame got through it all at good speed.

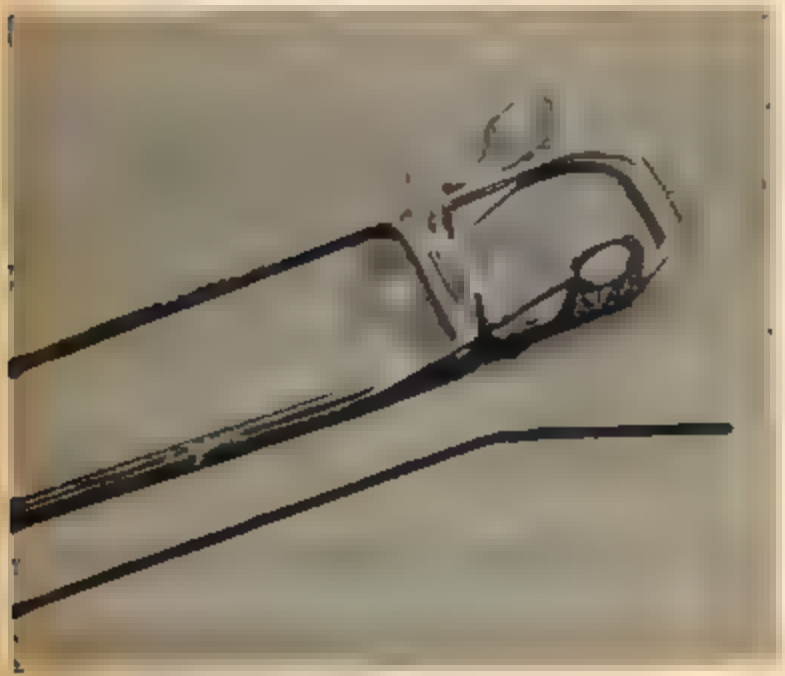
Look carefully at the chassis and the tracks that they run on and then maybe you too might start scratching your way to the winner's circle.

Before you even start to build your chassis take into consideration the motor and body you intend it to be for.

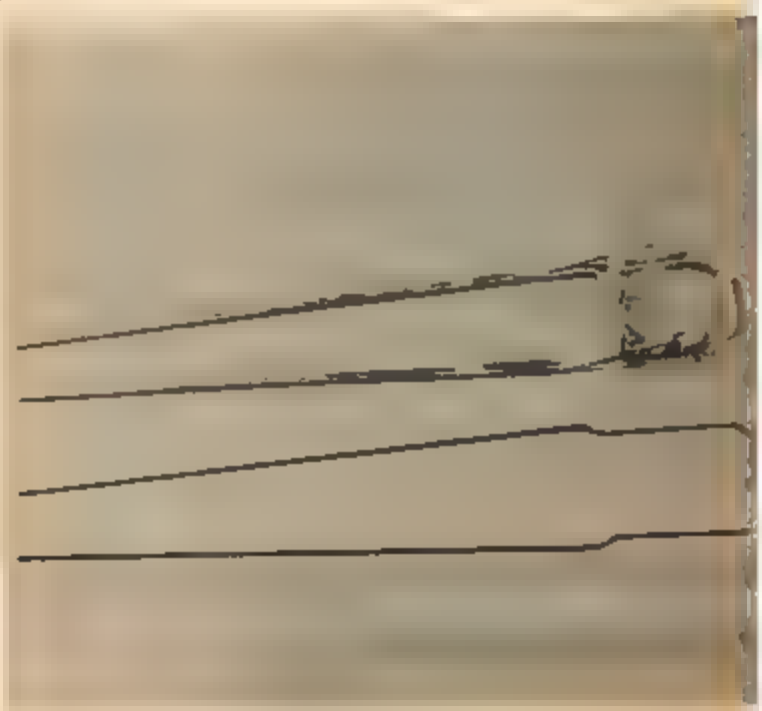


Also decide which rear bracket you want to use and the type of bearings you like the best. The Russkit 28 runs an Associated U-bracket with Veritec ball bearings.

All U-brackets should be well braced to cut down on vibration and gear lash. This bracket is braced with a separate piece of rod while others use one of the frame tubes.



To keep the chassis from bending up and down, a second tube is bent up to reach the bracket's top.



For a little extra strength and weight, a third rod is formed to fit around the assembly.

Now use an A-Justo-Jig to align the wheel base with that of the body. If your front and rear axle aren't parallel, then your car won't roll straight and will brake unevenly.

To keep your front axle parallel once you've set it that way, the outer two rods radius outward while the inner two bend in.

For an efficient drop arm, a small o.d. 1/8" Dynamic bronze bearing is used with a 1/16" brass rod.

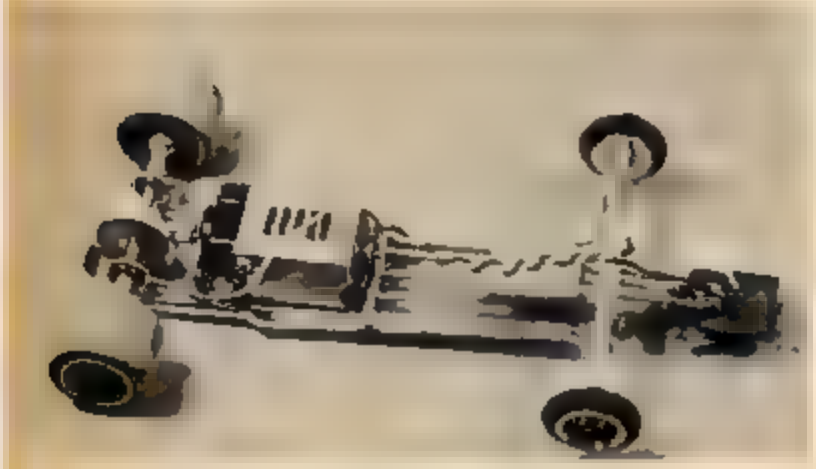
Your best bet for a smooth hinge is to make a set of 3/32" tubes as shown with the center (and longest) tube soldered to the arm. The pivot is 1/16" tubing.

An additional rod bent as shown will also cut down on guide arm flex. Have it run at the same level as the others until it is 1/2" from the bearing and then bend it up to the bearings' top.

Another brace for your front axle are the middle tubes, which are bent at a 90° angle and soldered to the axle tube.

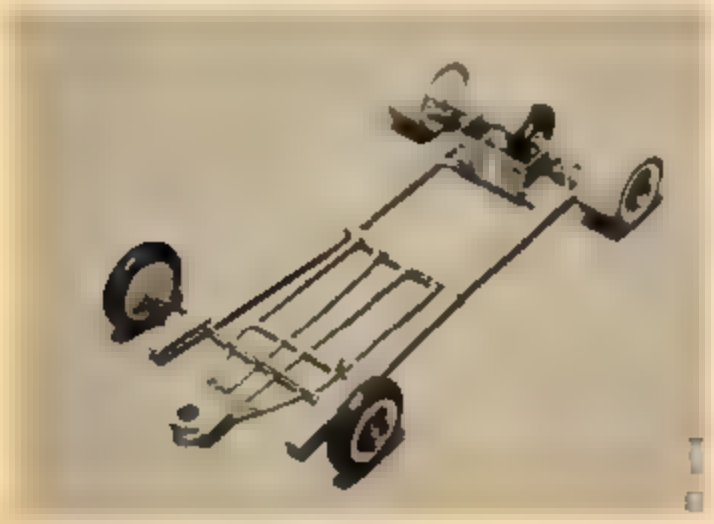
After setting the assembly back into the A-Jusko-Jig and giving yourself a 1/16" clearance, solder all the frame rails up to the axle tube.

The drop arm is soldered in place with the two short tubes in the previous photo, between the axle tube and the middle tube brace.



The completed rolling frame is now a custom designed creation for a specific set of needs. Being a Formula One type car it weighs little, so a bit of flex is built in.

The geometrically designed and braced frame for a Lancer Hamill is both very light and very strong. Frame members are made of K&S 1/16" brass tube and 1/32" wire. The perimeter bracing along the sides allows for positive positioning of the body and cuts down on vibration.



Nor Car's 1/16" brass rod sled type frame is braced as far laterally for smooth flex. Made long for a Russkit Lotus 40, if shortened it works very well in a Chaparral 2D. Note how well braced the drop arm is.

A 26D frame with Classic's latest U-bracket is set up for a Pactra Ferrari Formula One. The extra ballast of the Mabuchi called for an extremely stiff frame, which the inner rail of 3/32" rod provides. The frame is by no means light, but with the torquing 26D in rewound form it didn't matter.

BRING BACK THE BOB-TAILED WEIRDIE-ROD

KOOKIE'S "T"

There's no doubt about it. Funny cars now rule the automotive scene. Just check the car mags, model contests, and the latest kits on the market. The trend, for the last several months anyway, is toward speed and performance. And for the guys that dig that kind of noise, the situation must be great. But for me, I'll take the old days when a sharp car was a street machine . . . a rod that could not only move out, but showed a load of personality

Seems like many moons ago, since Edd "Kookie" Byrnes last parked his bob-tailed streetster next to "77 Sunset Strip." If you remember the show, you ought to remember that "Kookie" ran a clean machine. In fact, his rod had so many fans that, by the time the show was finally shelved, the name "Kookie" came to mean a bob-tailed street roadster . . . a short wheelbase rod, with little or no body work behind the cockpit. "Kookie" meant something like offbeat, or a little weird, but with a lot of soul; a car that was fun, and not just brute power.

It's not that I've got a closed mind when it comes to funny cars; but if I had my druthers, I'd go for a Kookie "T". Unfortunately, it looks like the bob-tailed rodding days are about over, or at least heading for an extended stall. However, before the Kookie "T" goes the route of the Moa and the Mastodon, let's give them one more chance.

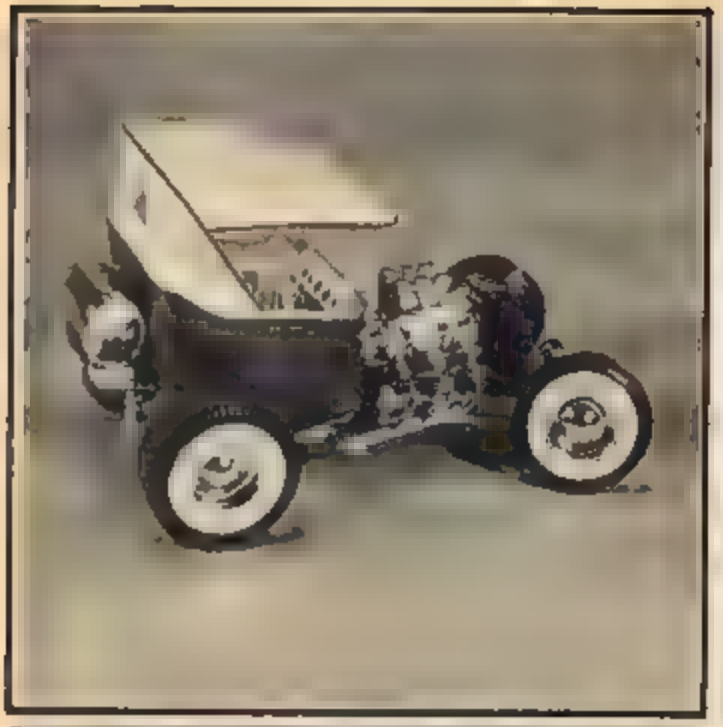
One of the best reasons for building the Kookie "T" is the easy-to-handle price. Besides paint and putty, all you need is a buck and a half for Monogram's Little "T" kit. Or if your taste runs toward the Grand Scale cars, all you need is a Big Rod kit also by Monogram. These kits will supply absolutely all the parts you need, unless you really want to go wild

The hardest part in making a Kookie "T" will be in reworking the exhaust system. As it comes from the kit, it is way too long for the shortened frame. Start by shortening the exhaust pipes approximately 3/4ths of an inch. Drill a 1/16th inch hole near the end of the pipe, then by using 3/32 inch and 1/16th inch aluminum tubing, make a cross-over pipe to link the exhaust pipe with the muffler. Notch the 3/32 inch tubing to fit snugly against the exhaust pipe

There is a lot more that can be done to improve the looks of your "T" It's just a matter of personal taste. It also wouldn't be hard to include many more detailed and working parts . . . and you should add them if you plan to enter any contests. The Kookie "T" is dead? Well, maybe not, after all Here's your chance to bring back the good old days and strike a blow for something besides speed.

By Dennis Doty

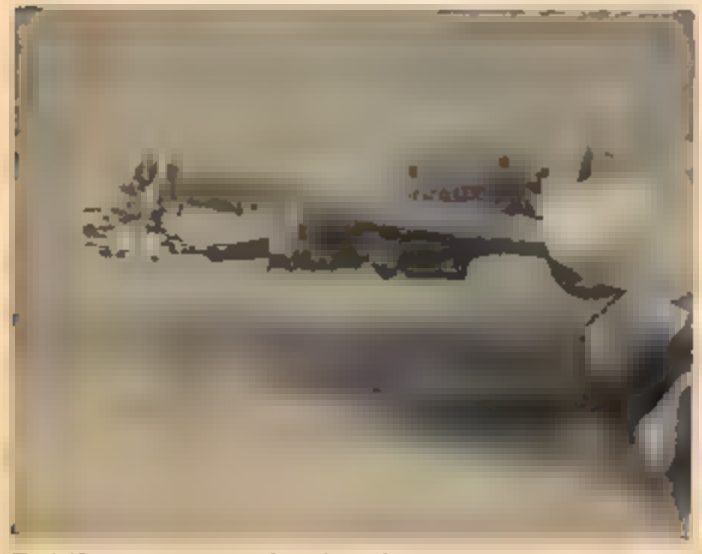
A kookie "T" usually has a short wheelbase. I had to shorten the wheelbase twice to get it short enough. Glue together in a jig.



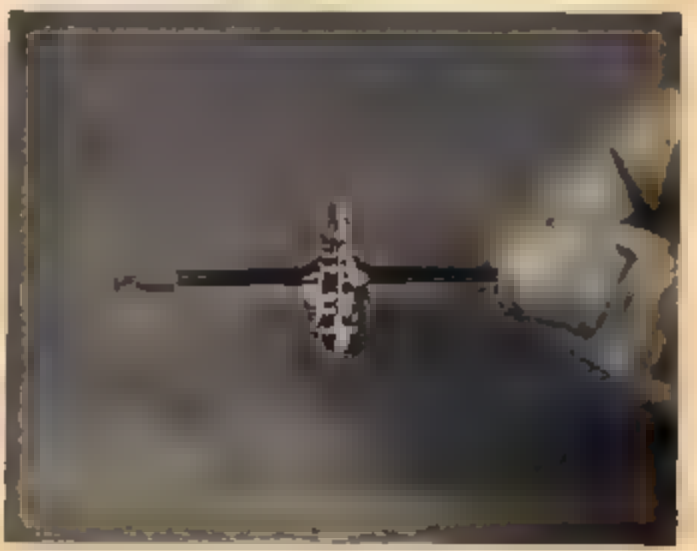
Fill gaps in the body with sheet plastic.

Make a longer platform for mounting the gas tank. Use the old one for a pattern.

Cut a hole in the interior for the hump of the frame to fit into. This will lower the body over the frame a little more

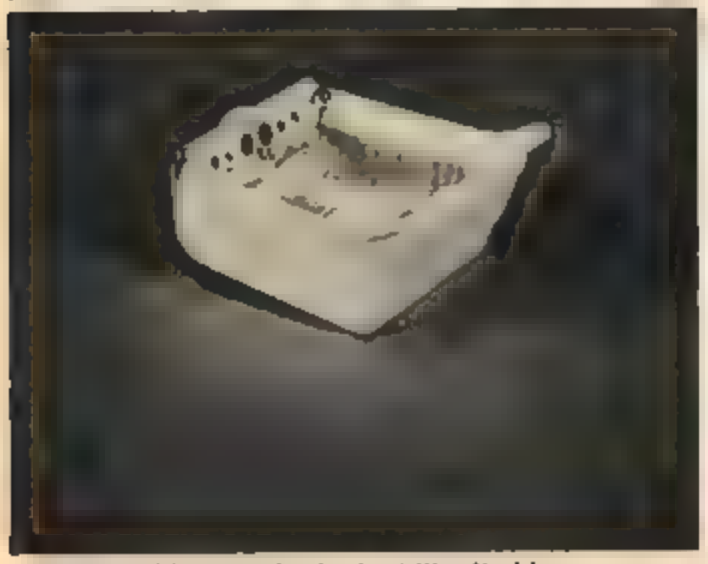


Cut the cross member/engine mount from the frame. Use discarded portion of frame to relocate engine mount.



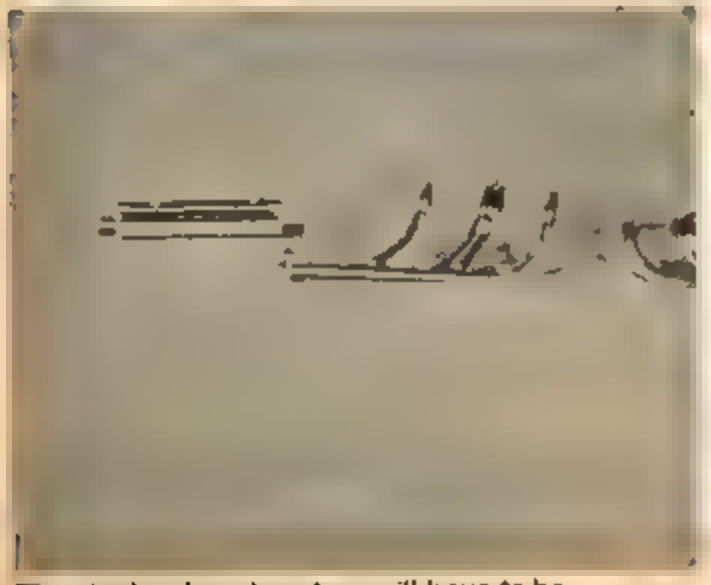
To fit the new shortened wheelbase the drive shaft must be shortened a little. Engine placement will determine how much.

File a notch in the body for the rear springs and fill holes for exhaust pipes.

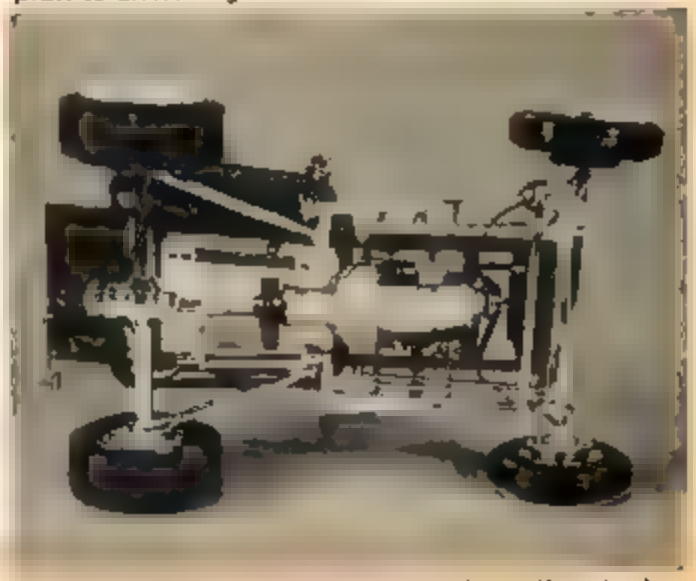


Completed interior looks just like its big brothers.

Completely wire the engine, especially if you plan to enter any contests.

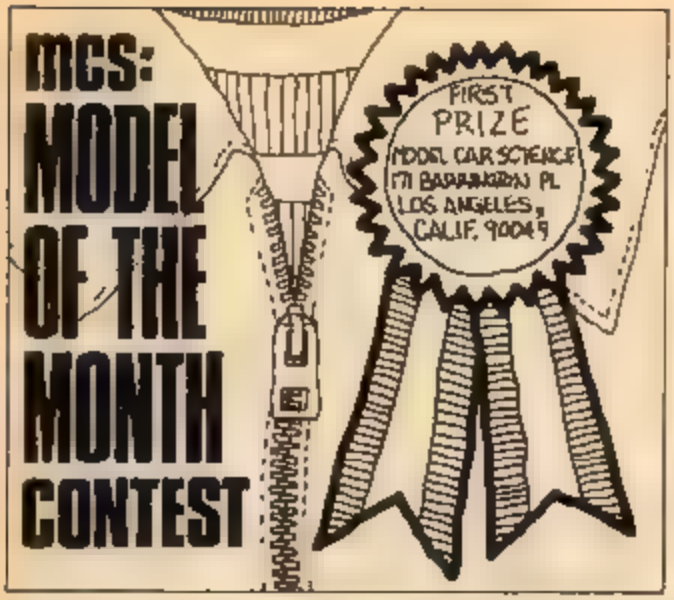


The stock exhaust system will have to be shortened. Text tells how this is done



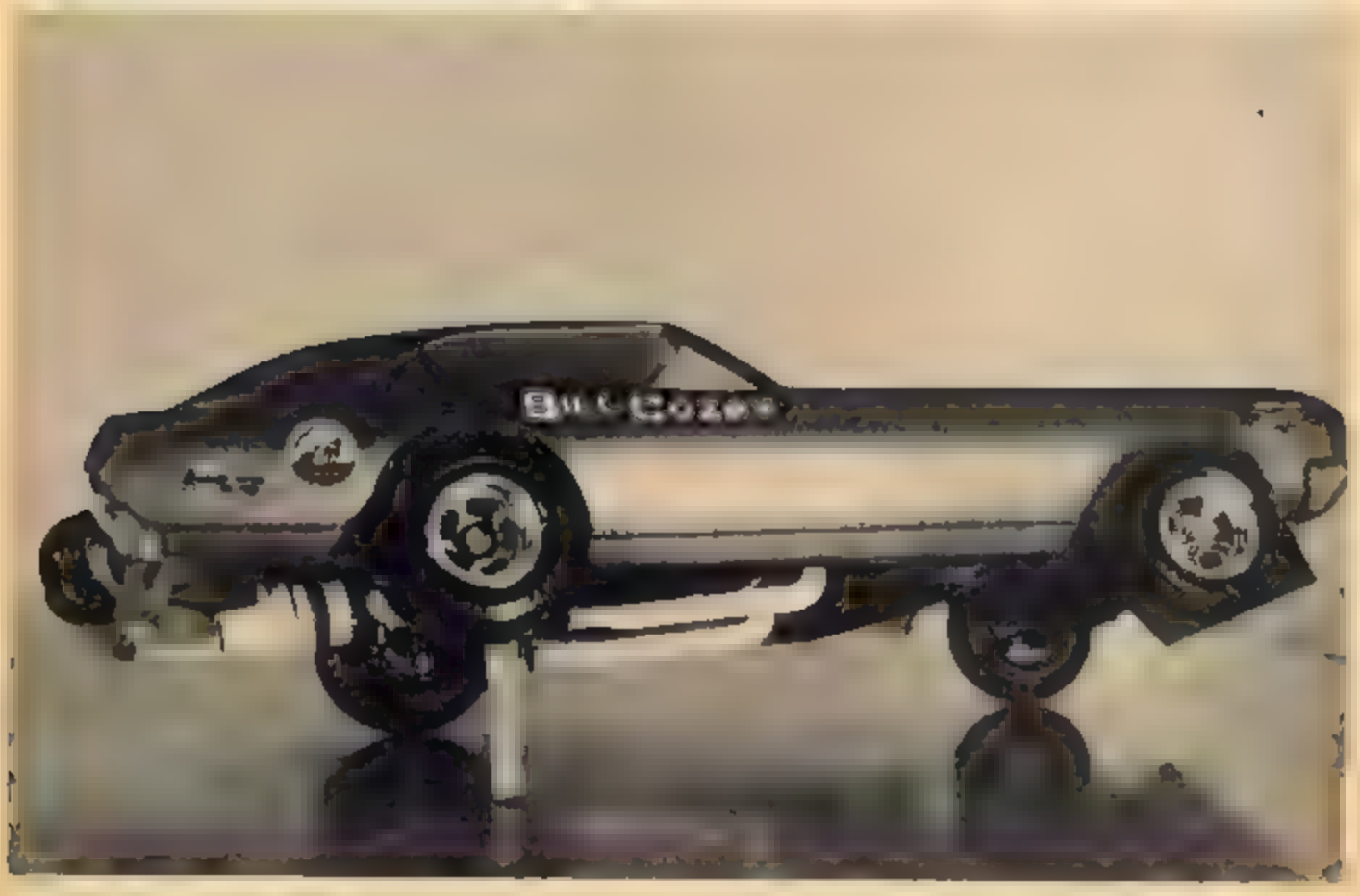
Finished chassis is a big change from the stock one. Glue body on.

MCS: MODEL OF THE MONTH CONTEST



BOSSEST WHEELS . . and taker of this month's $25 Savings Bond came from Don Schall, 158 Bartlett St., Rochester, N.Y., 14611. His "Penetration" dragster was based on a '67 Dodge Charger. Top was removed, cockpit moved rearward, and area filled with sheet plastic sporting custom scoop and roll bar.

Custom frame was scratched from wood dowel and aluminum tubing. Stock engine sports supercharger, bug catcher, etc., from Gerlin' Wynn's Jammer.

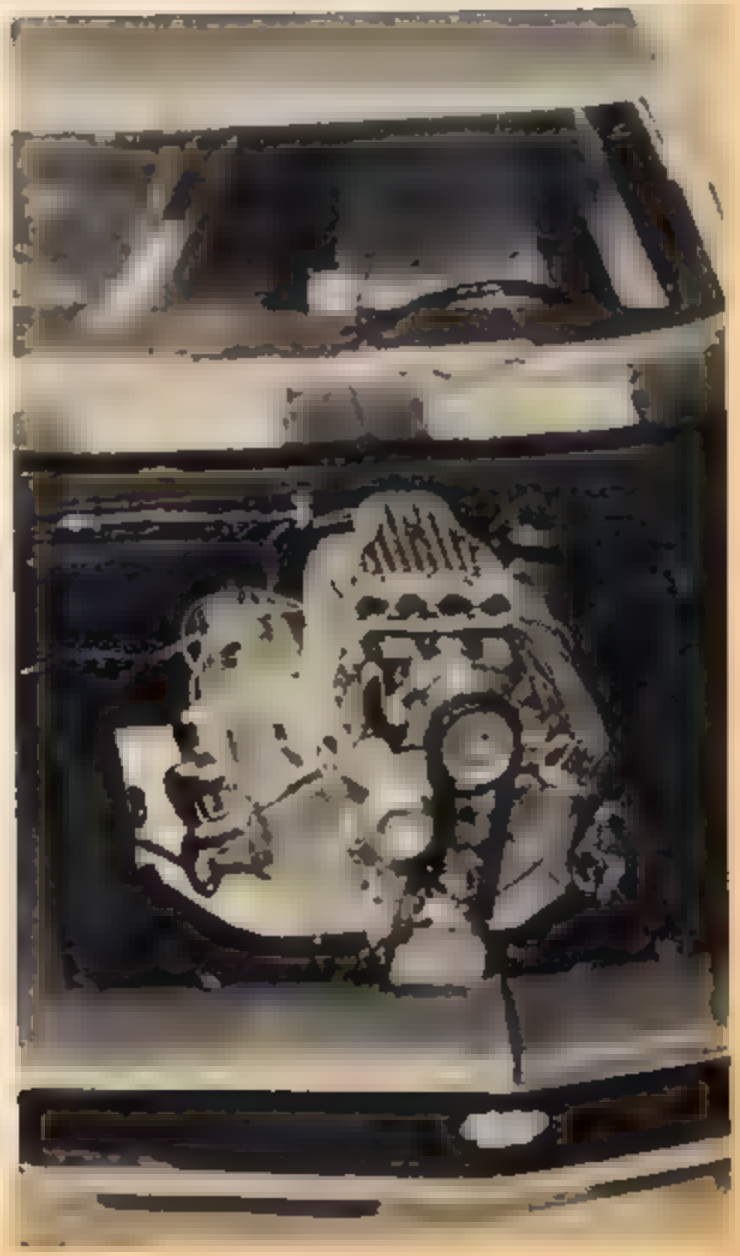


From Bill Cosby (!) of Brookville, Ohio came the "Wonderfulness" '66 Buick Skylark 'funnunny car.' Cockpit and roof were moved rearward, hood filled with sheet plastic, the body dechromed, and the wheels radiused.

The custom chassis is a combo of Vette, '32 Ford front end, '40 Ford rear, with a turbo-drag axle. Engine is a "Hemi-Head" with supercharger, injection and bugcatcher from a '65 Dodge Coronet.

Bob Chappell, of Quaker Hill, Conn., went detail-for-real with his drag 'Maro Funny Car. Full-wired engine is a blown 427 from a '67 Vette. The tail end sports a scratched turbo-drag axle.

From Mike Evans, of Natchitoches, La., come this double-powered '34 Ford dragster, with its bobbed body riding on a Challenger I frame.



Revell's '41 Willys got a paint job and half from Ron Baran, of Chicago. Ill. His "J. C. Grant", mostly stock and super-detailed, was finished with 10 coats of primer, 10 silver undercoat, and 45 of pearl white mixed with candy green.

"La Cougar Nacho" from Jim Jojola, of Los Lunas, N. Mex., rides on a scratched drag chassis, with a full-wired OHC Ford engine. Driver cockpit has been moved to the rear deck, with the mill just ahead of the rear wheels.

Another detailed looker from Bob Chappell is this stock-but-stacked Garlits' dragster. Engine is full-wired, with headers painted flat white and ends drilled. Finish is 15 coats of root beer metal flake.

Drill a pattern of holes, then cut out with a hobby knife. This shows the screen after installing.

Cut the screen to the pattern desired before epoxying to the body.

WHETHER YOU'RE A BEGINNER OR AN OLD THUMB, YOU CAN'T KNOCK THE PRICE... OR THE PERFORMANCE OF THIS BUDGET CHAPPY 2D

MONOGRAM'S FIVE DOLLAR FLYER

By Bob McCalla

It must be bargain day at Monogram! Why else, I keep asking myself, are they selling their new Chaparral 2-D kit for only five dollars? For, if you've been exposed to the world of slot racing for any length of time, you know that with that kind of money the only thing you can buy *usually* is a pocket full of lint. I'm exaggerating, of course; but, not by very much. It's just a sad but true fact of the spartin' life, that five bucks can't buy you much.

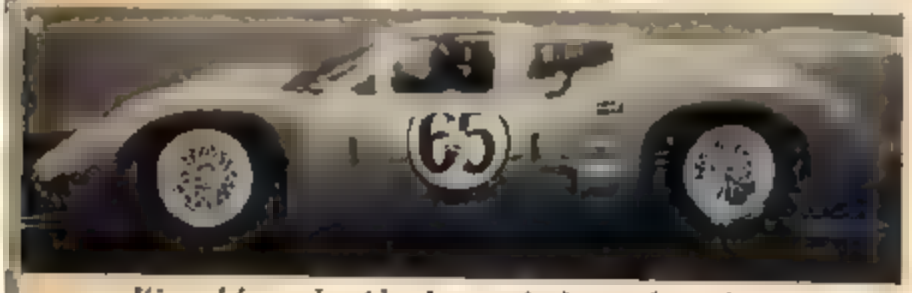
That's why I had some honest doubts when I first heard the word about Monogram's five dollar 2-D Chappy. Even though I had never been burned by a Monogram product, and personally had nothing but the utmost respect for the boys from Morton Grove, there just had to be some kind of a catch with this deal. And when I finally got my hands on the kit, a quick once over told me I was right. There are, in fact, two catches involved . . . but, believe me, they're the kind of catches I can learn to live with.

First of all, for catch number one, you'll notice that the packaging is nothing to write home about. Everything is sort of dumped into a blah cardboard box. Gives you the sinking feeling that you're holding a five dollar headache all in bits and pieces. However, it doesn't take long to remember that it's what's inside that counts. Right!

And this leads us to the second cost-cutting catch. Most of the goodies that make this Chappy

Drill the exhaust pipe hole through the body screen, then slide the tubing through and epoxy in place.

After cutting out the two louvers along each side of the velocity stacks, epoxy the screen to the underside of each slot.



Viewed from the side, the car sits low and steady and gives the appearance of a low slung bomb.

From the rear, the car has a brutish appearance. The big sponge slicks and wire wheels really give the car the authentic look

The complete drivers' dashboard interior, seats, and mirror also help the concours minded builder to perfect this model.

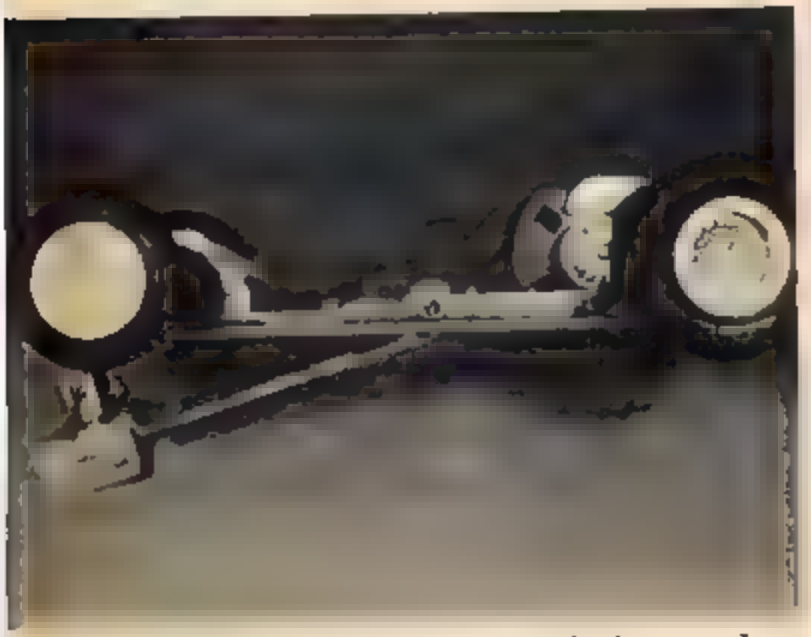
The view of the spoiler in the braking position.

move aren't new to the slot scene. The motor, for example, is an improved Mabuchi 600B. It also powers the Monogram Ford GT-40, among other winners, which retails for $9.00. In effect, what you get are strictly quality parts currently used in other Monogram machines . . . put together at a very low cost to create a whole new car.

A run-down of what $5.00 will buy includes: a one-piece injected molded body, with a spoiler that really works; full interior including dash, floorboard, chrome shift and steering wheel. There is also a full length driver with movable arms to grasp the wheel. The 8 volt motor rides in a lightweight one-piece aluminum frame, which itself features a low CG., weighted pickup, four bearings, sponge slicks and precision machined wheels. All in all, a very nice rig for the money. Both for racing and concours competition.

Of course, there are a number of modifications you might want to try with the budget Chappy . . . especially since you ought to have some coins left over. However, I'm not really that much of a speed nut. My money goes the route of body detailing; and I have some ideas I think you should try. If you're interested, start now by cutting out the contoured screen area at the rear of the body. Next cut out the two long areas on either side of the square provided for the interior pipes. A piece of model screen material (available from DU-BRO) may be used for the screening on the rear section

Again the spoiler in the accelerating position.



The long swing pickup arm makes for better guide to track contact and smoother handling.

The aluminum frame rails just in front of the swing pickup pin must be filed out to allow the seat portion of the interior to sit lower.

Cut the tubing for the exhaust pipes with a small cutter (International Engr.).

The finished body and frame together make a well-molded pair.

and the two louvers alongside the injectors. The small vent hole near the front of the right front fender may also be cut out and filled with screening.

After cutting the holes, trim the screen to fit and epoxy to the body and let set up. A fast setting epoxy such as "Klenks" will harden in approximately five minutes. After the epoxy has set, drill out the two exhaust pipe holes at the rear of the body to the desired diameter. A piece of aluminum tubing works perfectly for the exhaust pipes. After inserting the tubing into place, apply some epoxy and let set.

Before attaching the frame to the body, you may want the car to sit a bit lower. This is easily performed by trimming a small portion of the mounting post in front, before attaching the metal screw plate which receives the holding screw. The two slots at the top and front of the floorboard will have to be trimmed and cut to allow the aluminum rails of the frame to ride farther up into the floorboards. The rear of the car sits low enough to satisfy most of the racing buffs, so there's no need to alter it.

Finally, the rear spoiler works on a fulcrum basis, moving into an up position as the car is braked, and returning to neutral during acceleration. How effective it is may be questionable, but it is a nice finishing touch to an already great buy.

THE CAN WITH THE CUSTOM BEANS

by Chris Chan

... Or how to make a rewind even better.

MOTOR REBUILDING OR CUSTOMIZING IS about the most important and most interesting step in the making of any pro team's slot car. It involves the actual altering and replacement of the basic components of the motor. In actuality, very little rebuilding is done for higher motor speed, or RPM, but rather for increased reliability and better torque and/or improved braking. One look at a good, strong rebuild (in slot car lingo a "jet") and the alterations are obvious: additional armature laminations, (or, in some instances, less armature laminations), altered cases for better magnets, and bearings are a few of the easier to spot. Other modifications such as better brush springs and higher quality commutators are less detectable, but equally important.

A quick evaluation of the motor in your car may give an idea on how the customizing should commence. Take for instance your hot rewind. It really comes on at peak RPM, paves everything down the long straights, but lacks good brakes and is slow on acceleration. Sure, you could gear lower, but sometimes the only ratio that will help leaves you with too large a crown gear for your tires. Another common rewinder's malady is the motor that has so much torque and brake that the driver is completely unable to control the car. The excessively swift starts and stops could possibly be contained with a higher gear ratio and a lower ohmage hand controller; but nothing can make the driver any more capable of handling the car than months of practice. The point to be made here is that both of these problems and many others can be solved in motor rebuilding. Check your problems, then use the following system to cure them.

Analyze your requirements first. Take into consideration the course of your raceway, noting all of the areas where you feel you are losing time to your opponents. Check up on popular rewinding tips for the power supply available. Although the actual wind will not be dealt with here, a good wind for your track is necessary for a fast rebuild. Finally, and most importantly, evaluate your personal driving characteristics. Only you know what you want in a car. It may be stop-on-a-dime brakes, blistering acceleration, or smooth predictable coasting. When you rebuild your motor you can choose alterations to fit your needs without the necessity of affecting the rest of the car in the least.

After following the steps for a more suitable and powerful motor, you can then further modify its construction by adding a few miscellaneous items for increased reliability. First and foremost in this category is dynamic balancing. It is extremely unlikely that, with all of the modifications, your armature won't be grossly out of balance. In addition to removing any traces of vibration, the dynamic-balanced motor pulls far less current. Make certain that your rewind works by running it very slowly on your test bench, and don't mar the shaft

MOTOR KITS

If you want to bypass all the hassle of tearing apart an old motor or ruining a good one, there are some great motor kits available. Most of them supply rebuilding accessories right in the box.

In addition to the ultra-powerful Arco 33's the Champion of Chamblee kit includes a Kirkwood "bio proof" comm and large wire.

The Pactra Hemi 300 kit is basically the same as the completely assembled model with the exception of a lower price and both #30 and #29 wire spools.

The Mura folks sell a Combo rewind kit with an end bell from a Mabuchi (for better brushes) and a case from a Hemi (for better magnets). Other handy items are better quality springs, an improved armature blank with the Kirkwood comm, two spools of #32 wire (for a double wind equalling a #29), case rivets, and a twig of silver solder.

A Russkit 23 rewinder's dream is a French Motor Company product. A spool of their great heavy formvar wire, a Tradeship-French O* comm, better brushes and springs, and some silver solder.

in any way, then send it out to, John Thorp, 143 W Commercial St., Pomona, California 91766

Send just the armature (already rewound) in an envelope marked "Hand Stamp;" include a check for $2.50 and the armature will be zipped back to you by return mail epoxied, dynamically balanced, and with the comm trued. Two other bits that are both simple and useful are double lead wires and Versitec motor brushes. The use of two lead wires in place of one serves a double purpose of having lower resistance and giving you a "spare" in case of breakage. Versitec brushes have tiny lead wires actually in them to eliminate the rather lax electrical contact provided by the springs and heat sink. Carefully silver solder the leads onto the heat sink retainers, then install as usual. The brushes are also hexagonally shaped for slightly higher RPM.

When you've finished all the steps in rebuilding your motor you might also like to give it a little bit of individuality by spraying it a different color. It's best to first remove the old paint with a file-cleaning wire brush. Mask off the inside before painting, so that the spray won't insulate the magnet from the case and weaken your field. The best, and widest variety of paints applicable to tin can cases are automotive touch-ups. Just follow the instructions on the can and then bake your case in the oven. If your tabs have broken off, use Mura's pin tabs instead. These little rivet-like screws are compact, strong, and easily removable.

You've got a jet now that will take on any rewind and walk all over it. Just hang it low in a nice fast frame and start winning the way the pros do.

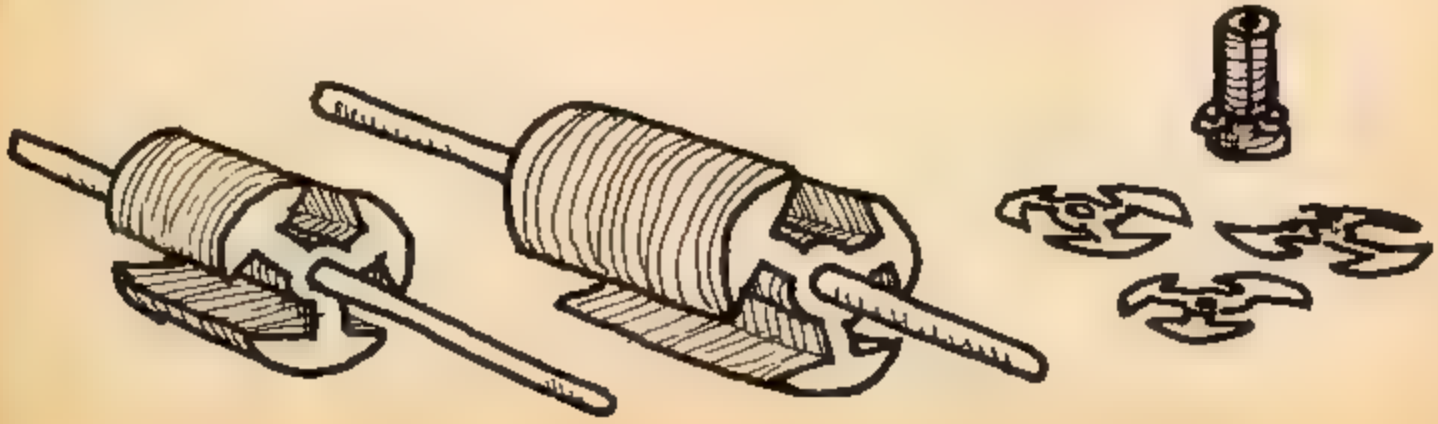
ARMATURE LAMINATIONS

The Laminations on your armature can be very important in the performance of your rebuild, as can be the material used in them. The more extra laminations stacked onto your shaft, the easier it is to get more wire on and the greater the torque. The extra plates are added on from an old armature of the same type.

Newer armature blanks are marketed by Mura and French with extra laminations and better commutators. Champion of Chamblee has a stock lamination with the Kirkwood comm.

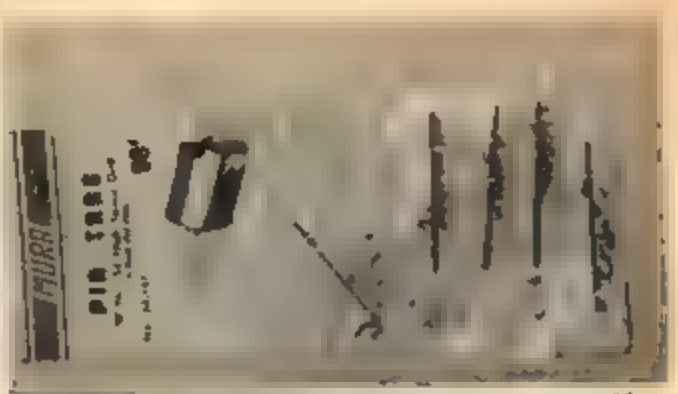
Whether you go more or less than stock you must make sure to insulate them with fiber plates.

Some of the hot pros have such hairy rewinds they have to shave them to run them on the tracks. To make an easier-to-control jet with fantastic brakes they often remove two or three laminations.



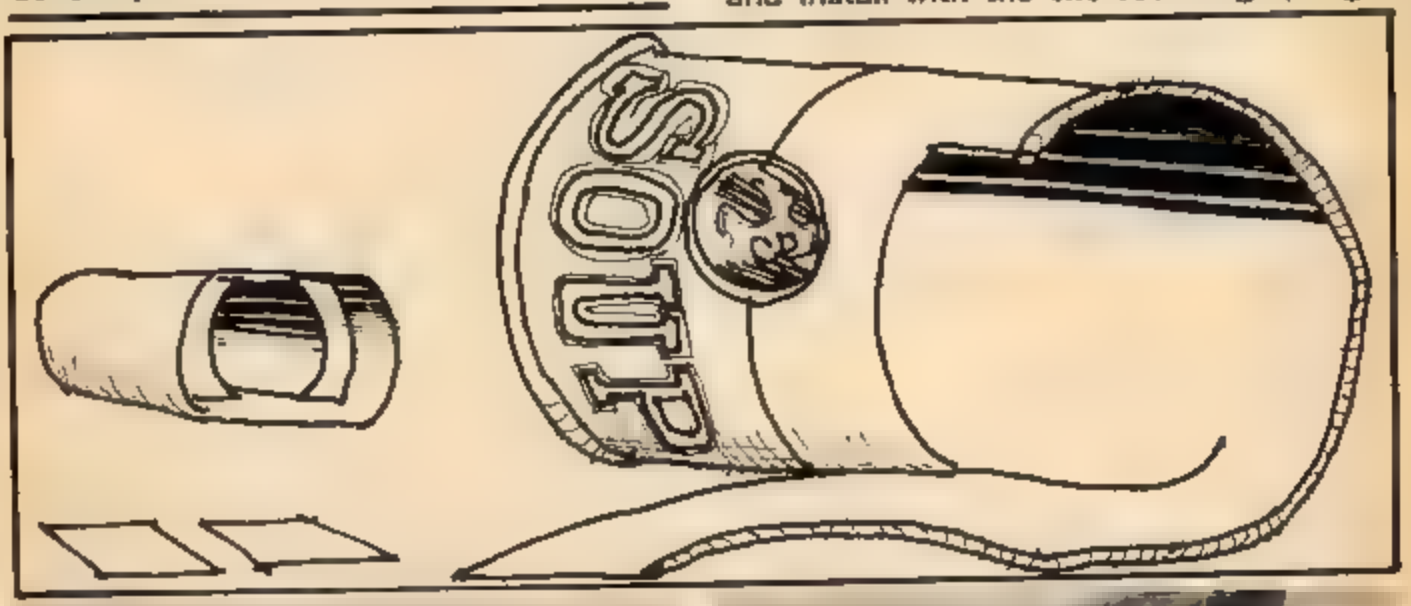
SUPER TORQUE MAGNETS

Champion of Chamblee's famous Arco 33's and the similar Magnum 44's of Ron Mura both provide field strength many times greater than those of the stock components. When installed as stock they perform very well, but with tin shims they are unbeatable. Never bother to shim with paper or tape, because you will isolate the magnets from the case and weaken the field. The tin shims will actually increase the field strength. Remember, though, that the newer magnets will drastically cut down your RPM, so time about 10° in advance and gear accordingly. Even fully charged magnets should be rezapped for best performance. Remove the coating of paint on each curved side and let your dealer do the job.



Mura solved the problem of snapped off motor tabs with this great kit.

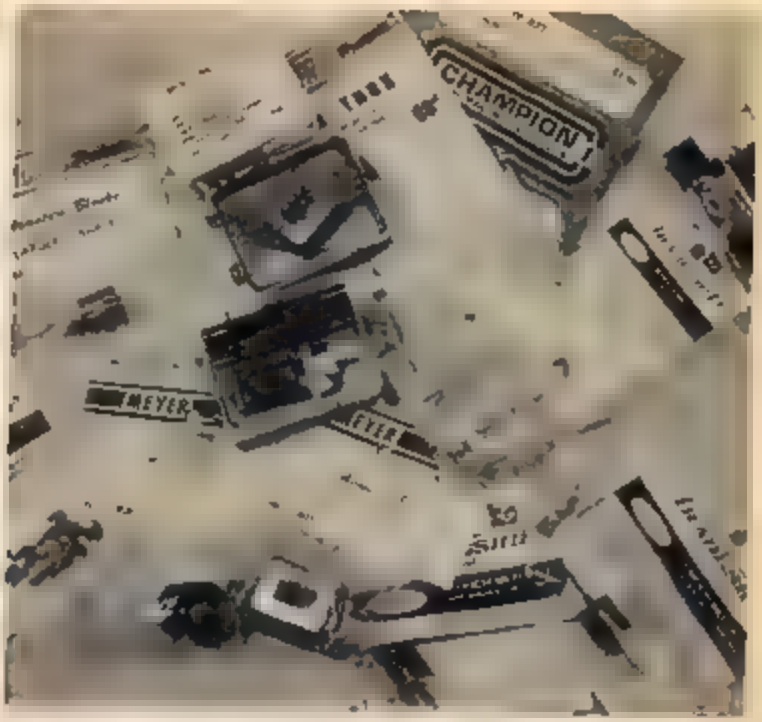
A regular soup can provides enough shim for dozens of rewinds. Just cut off little squares to fit behind each magnet and install with the two retaining springs.



The Arco 33's on the left are larger and slightly more powerful than the Magnum 44's, but are scarce on the West Coast. Although they appeared to be different in field strength, they both ran about the same.

Use a pin vise to drill out the hole and tap in the pin tab "rivet" with a small hammer. Needle nosed pliers can later be used to remove them.

We really tested this product, but as you can see, the pin tab still holds on.



Motor rebuilding has become a big market for specializing companies. Champion of Chamblee, Mura, and French-Tradeship have the largest and best lines we've seen. Their wide selections make it possible for from-the-ground-up construction of a real pro machine.

Versitec, a division of Globe Industries, is known particularly for having the most expensive motor in slot racing. But little known is that they also have the most efficient motor brush. These little gems fit right into the 16D mabuchi and have current carrying tails to eliminate power loss.

Champion of Chamblee has one of the most radical lines available. Some armature blanks come with #27 wire; but don't laugh, that's what some west coast pros use. More significantly though, are the fabulous Arco magnets that they introduced. For more late news check Speed and Tech.

SCRATCHING

THE CAT (CAR)

OUT OF THE BLACK OF NIGHT COMES THE FRANTIC FELINE FUSELAGE OF T. HEWITT EDWARD CAT.

The newest fad sweeping the country appears to be the super-hero mania. There was a time when you looked to the skies in fantasy all you saw was a lowly figure in a blue and red suit with an "S" on his chest yelling something like: "Up, up, and away!" Now the imaginary skies (also ground, water, mud, transoms, etc.) of the mind-boggling boob-tube are overrun with every conceivable manner of bird and fowl (bats, hornets). Following in the footsteps of the demand for super-heroes has been the demand for models of the wild vehicles they drive. Unfortunately, these hero-cars are often as impractical (although operable) as the figures they carry, and are eventually forgotten in the crinkled celluloid of a canceled show. But a clean custom, on the other hand, can hang on even without a hero.

In keeping with their desire to create a believable hero, the producers of the NBC-TV series, "T.H.E. Cat," were faced with providing the hero, Robert Loggia, with on-screen transportation that would be as unusual as the character he was to portray, without becoming as ridiculous as some of the machines used on the comic super-hero shows. With this in mind they turned to AMT's Speed & Custom Division, where Gene Winfield set to work modifying a 1967 Corvette Sting Ray for the purpose.

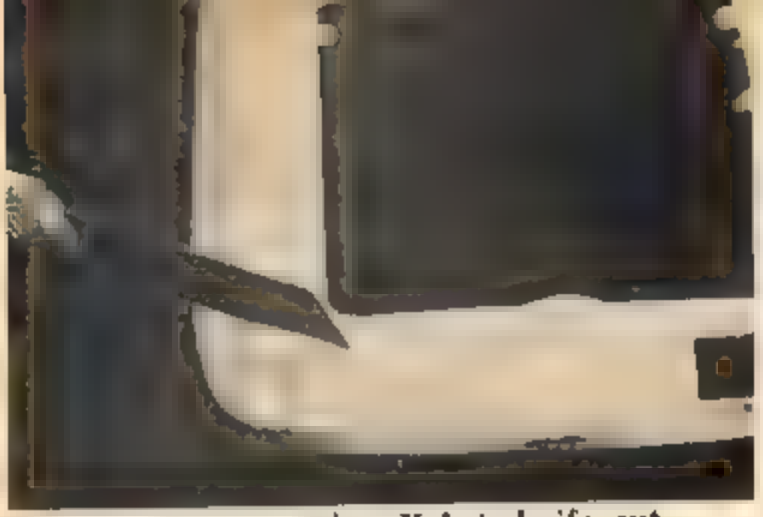
The result is a distinctive Custom Corvette Roadster that looks almost standard, yet carries subtle but significant modifications. Among these are a new front end featuring headlights styled as cat eyes (which glow from interior illumination), two added taillights, and a storage compartment behind the seats to carry the ropes and special hooks needed for The Cat to exercise his skills as an ex-aerialist and ex-cat burglar.

By far the most interesting aspect of the modification, is the streamlined roll bar behind the seats. A reverse airfoil shape, it provides not only rollover protection, but stability at high speeds. Further, it is fitted with two flip-up panels which act as air brakes to assist slowdown from top speeds. As a finishing touch it has been painted in a deep royal blue-black . . . unobtrusive at night, but gleaming in the sunlight.

Building of the Cat Corvette model is relatively easy and could be done satisfactorily by most modelers without difficulty. However, it should be noted that the easiest way to work up the car is to use both the AMT Sting Ray convertible and MPC's '67 Vette Fastback. Either one used alone would involve considerable puttying. The combination needed is a convertible body, with the '67 hood scoop. It seems worth getting both kits, if only for the time and labor that will be saved in not having to scratch the various parts. The end result is a real sharp and clean lined machine that's a sure winner, even though T.H.E. Cat may end up the loser in the TV rating game.

By Bruce Miller

Photos by Bruce Kline

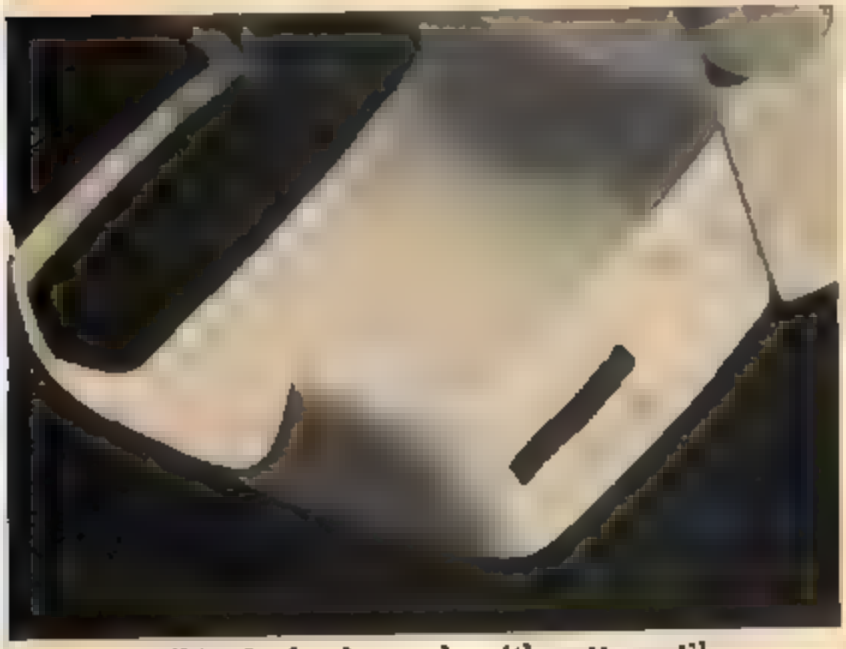


Using a razor saw and an X-Acto knife, cut the headlight covers from the body. Keep them intact, as you'll need them later.

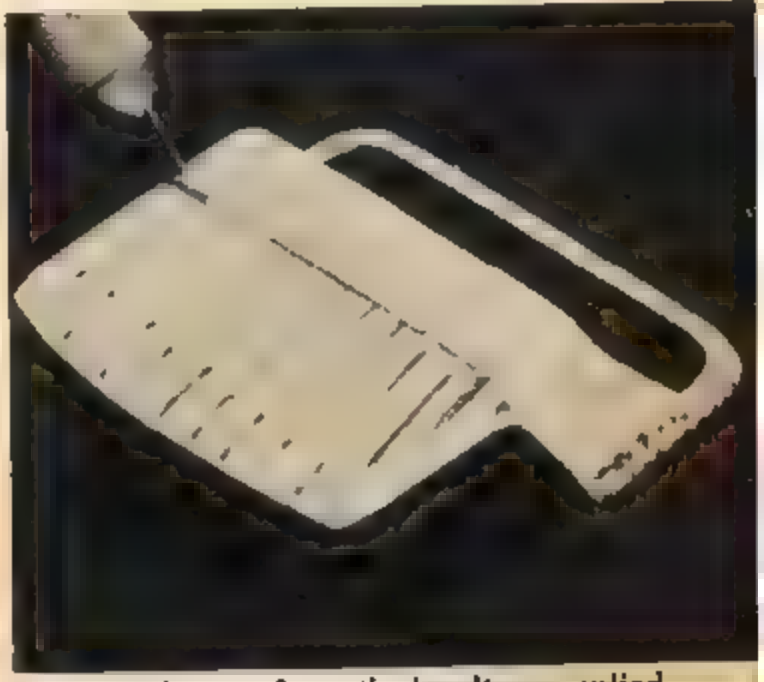
With a file and then with fine sandpaper, remove the parking lights. Plastic is thin at the joints in this area, so add a small amount of putty inside body for support.

To get a Vette convertible with a '67 style hood, the easy way is to combine an MPC and AMT kit. To match up, gently file the hood continuation on the AMT body till it fits that of the MPC hood.

To fill the area left by not using the rear bumpers, cut two pieces of plastic about 1/2 inch long. Glue to inside of fender slots.

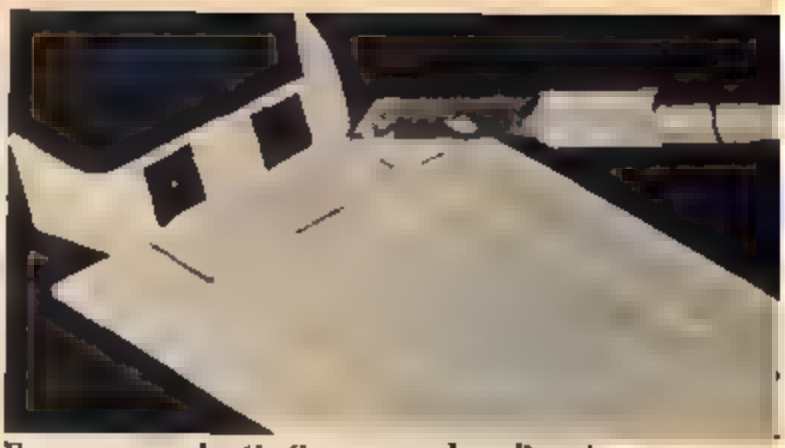


Fill in the back panels with putty until almost flush; sand with #500 sandpaper. Fill remaining cracks with more putty; finish with emery paper. Then spray with primer.



The airfoil is cut from the hardtop supplied in the AMT kit (or scrap); and then sanded with emery paper to remove molding etched in the rear and sides of the hardtop.

Two squares (3/10 x 1/2 inch) are centered and drawn on the airfoil so that there is 3/10 inch between them. Each is then cut out with an X-Acto knife.

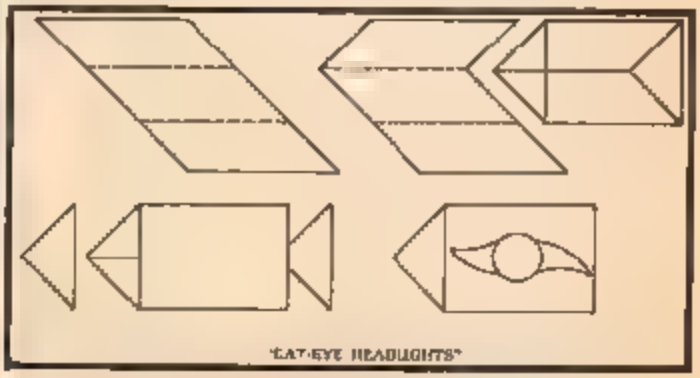


From scrap plastic (i.e., spare hood) a piece is measured and cut to fit the entire bottom of the airfoil, and is glued in place.

Putty is then applied around the entire bottom and edges of the airfoil and sanded to make bottom portion flush with the top.

After the airfoil has been glued in place, puttied and sanded, two pieces of plastic are cut to fit the slots in the top. Wire is used to simulate the supporting posts, thus completing the airbrake flaps.

The frame and chassis components from the MPC kit have a somewhat greater detail potential . . . plus independent front suspension, and therefore edged out the AMT rig.



To make the "Cat-Eye" headlights, a piece of scrap plastic is added to each headlight cover. The exposed sides are filled with putty and/or plastic. Sand, prime, and paint. The eye patterns are cut from card stock, and glued in place.

Some guys seem to stir up arguments just for the sake of making a lot of noise. They come all unglued over some really small-time-type problems. One example of this unnecessary hot air is the ever recurring debate about detail-vs-custom. One group of modelers, say, will give out with pure uncontrollable disgust when a wild custom machine appears anywhere among these hallowed pages. And then again, there are the fanatic followers of Utter Kustom who start eating their putty at the very mention of such things as a working dipstick, or detailed battery cables.

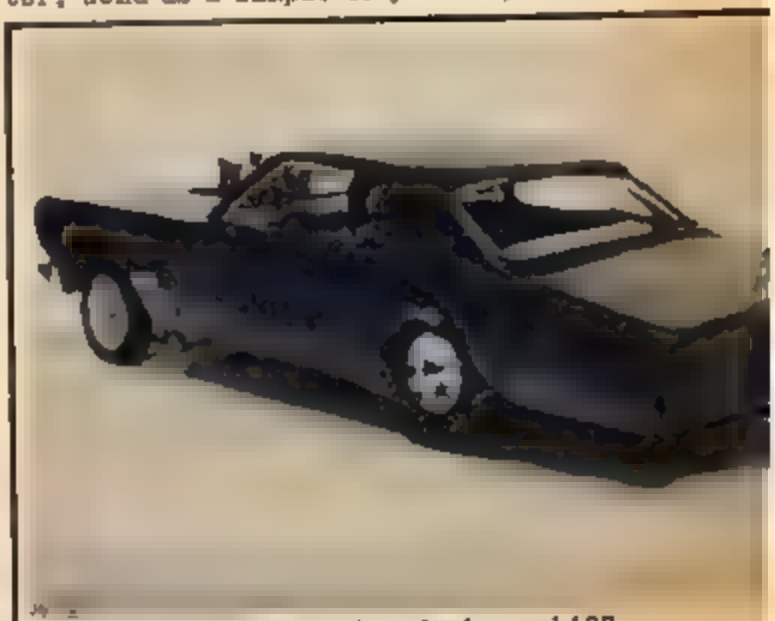
Personally, I confess to a rather obvious preference for serious detail. But, by the same token, I'm not about to jump all over a customizer just because he has a fixation with bubble tops and flared fenders. In fact, I really like a lot of the custom wheels I've seen, particularly when they're well done and make sense. And there are times when it's obvious that the readers are turning out sharp machines that are far better than anything we could do here at MCS (our only and honest excuse is lack of time; we usually have only a matter of hours, or at most only a couple of afternoons to spend on any one car).

Since my main interest is in super-detail, that's the kind of assignments I get from the All-Wise Editor. And the recent trend on the scale-scene toward speed and performance has put a growing emphasis on detailing for realism. This of course would make any detail devotee feel kind of superior.

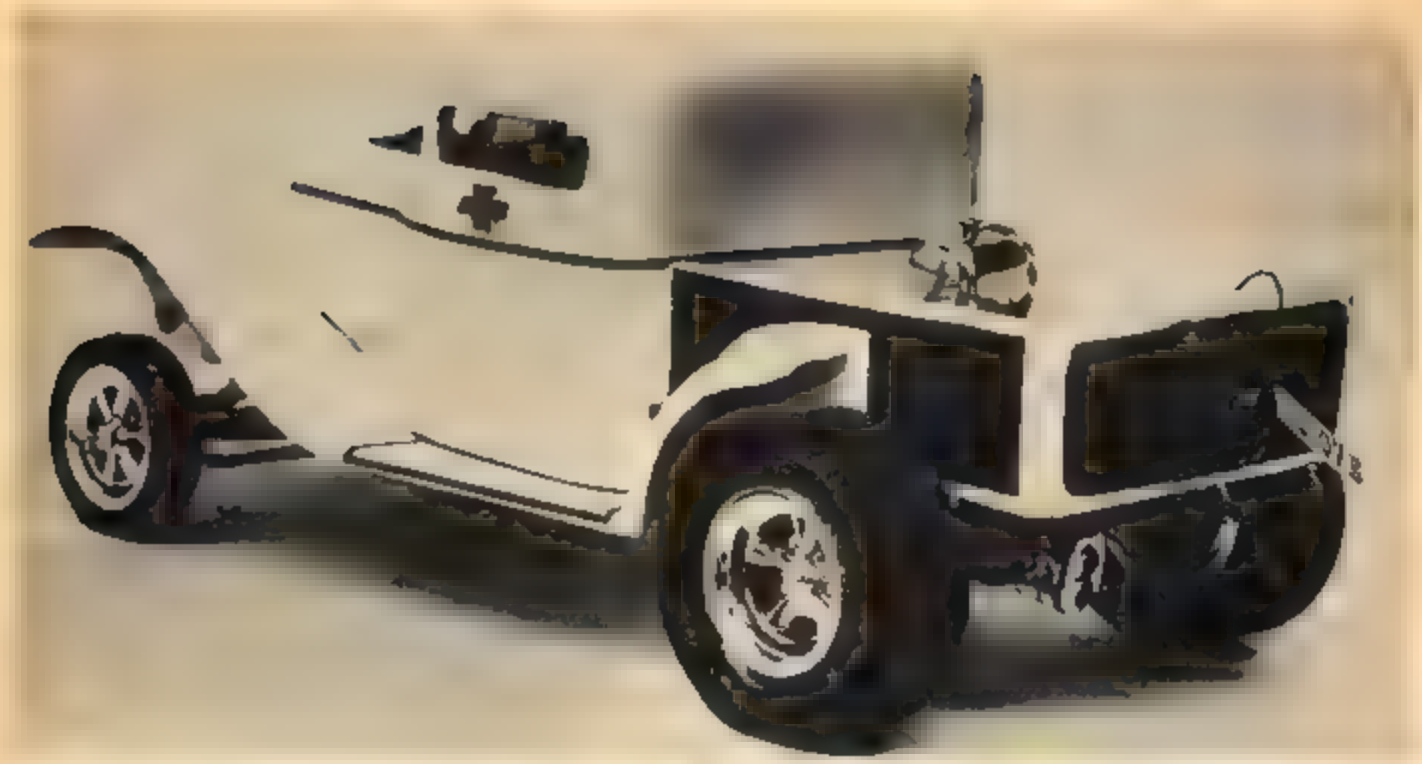
The only problem with feeling rather big-time about the situation is that every so often some reader pops up who's got a great hand at doing both custom and detail. And right now the kind of guy I'm talking about is a guy like Chris Geiger, of North Merrick, New York. A once-over of some examples of his craftsmanship can't help but convince you that this builder has the gift . . . a steady hand, a good eye, and a cool sense of balance. Of course, he's not the only guy so blessed . . . and I don't want Chris to think that he's the high man on the pile . . . and I also don't want every other reader down on my neck for ignoring his particular line up.

Of the 130,000-plus scale fans who read the wall scribblings of MCS every month, there's got to be an awful lot of guys who are really talented. Both the monthly contest and the law of averages bear this theory out. There must, consequently, be somebody better at the art than Chris (sorry about that, fella). Why then, this fanfare for the Master Modeler of North Merrick? The reason, like our Editor, is simple: the "Geiger's Counter" and all the other tuff stuff (particularly that '34 Ford funny truck) serve to prove a point. When an automotive modeler is really good at the art, when he's really involved, he knows, either innately or by experience, that custom and detail go better together than either-or. He uses both approaches to work up a machine that's his own. This doesn't necessarily make it categorically better than a "strictly-stock-but-detailed-rod" or a "fogged-flaked-flared-groovy-set-of-wheels." But what it does make it, most of the time, is a car that wins contests. Period.

So with this parting shot I'll leave you . . . all you guys who gripe about too much custom stuff in MCS, cool it! And you other people who say you've had it with the detailing bit, do likewise. Just read, heed, look at the pictures, and maybe learn something. And if you know you can do better, send us a sample of your style.

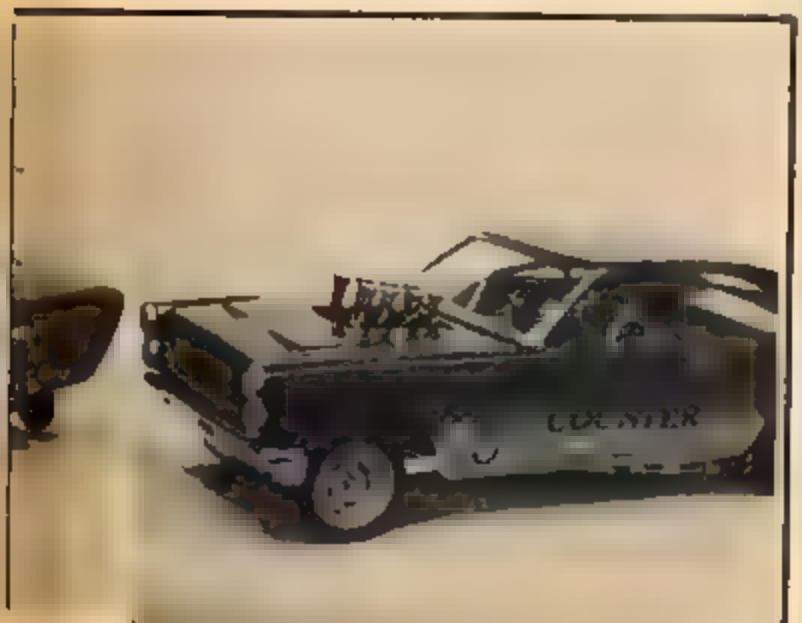


The "Counter" itself is a dechromed '67 Comet, riding on a custom chassis combining a '55 Nomad wagon front end and a '40 Willys rear. The exterior rear and deck have been molded in with sheet styrene.



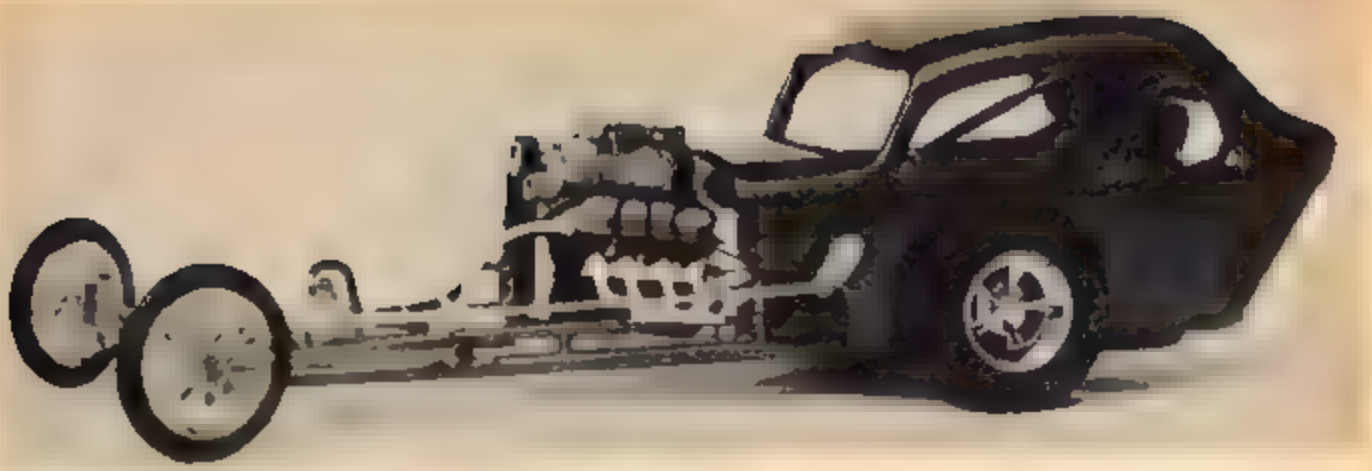
The bed has been bobbed and channeled, the fenders shortened, and the running boards trimmed to match the altered wheelbase. Rear window has been filled in for cleaner lines.

This '34 Ford pickup done as a funny truck is a real wild idea. Driver sits up front, thru the hood. Body has been chopped, channeled, and filled. Chassis is a modified '32 Ford with quick change rear end and traction bars.



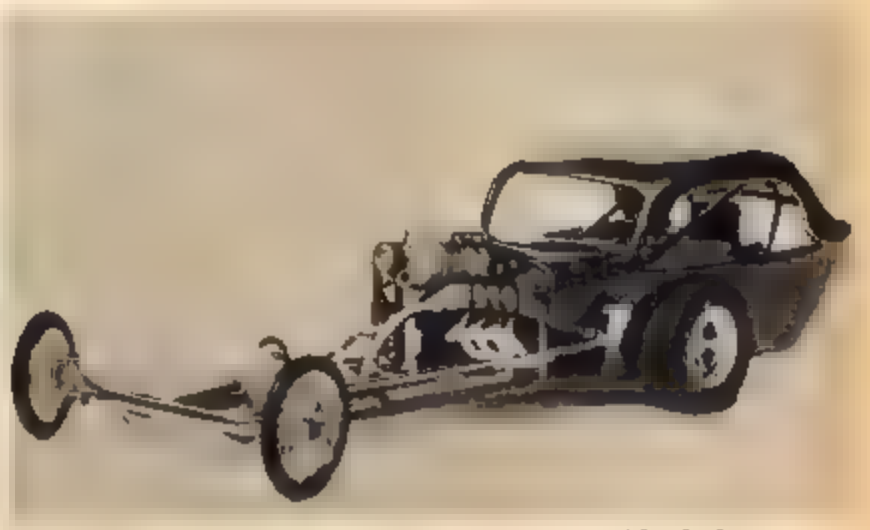
Both the front and rear wheel wells have been moved forward (cut-n-filled), and a pair of caster wheels added on the tail. Letraset lettering is used on the sides.

The engine is a blown and injected 409 Chevy. Spark plugs and ignition wires are included, the injectors wired and the starter hooked up to the battery.



Drag chassis is from the Monogram Sizzler, with a front end scratched from aluminum tubing. Front wheels are held in place with .001 nuts and bolts.

A '40 Ford coupe body was radically reworked for this dragster. Rear end was removed, wells cut in the door area, the windows enlarged, and the body molded and sectioned.



The engine is a 427 Ford, with full wiring. Fan belt was made from black tape. Injection is wired, as is the tach. Steering is done thru the drag link.

This low-slung roadster was worked from a '29 Ford. The windshield has been chopped and the body channeled. Door are molded in, the aerials sunk, the license plate recessed, and a peaked line molded into the rear deck.

The engine is a full-wired 427 Ford. The chassis, pipes and other speed equipment are from the unfortunately-defunct Revell custom accessory packs.

Clean-lined is the word for the reworked '55 Chevy Nomad. Fenders have been extended, body chrome removed, wells radiused, tail gate cut down, and a license plate housing molded in.

The hood was pancaked, a scoop cut in, quad lights molded in and the front pan rolled. The engine is an injected and wired 409 Chevy.

Mildly customized for the street and strip is this '66 Chevy SS. The body has been dechromed, a hood scoop molded in, and the taillights repositioned to the bumpers.

The engine is a 396 cubic incher with dual quads . . . detailing includes ignition wires, gas lines, and battery cables. Interior is black and gold corduroy, contrasting with a candy tangerine over gold exterior.

THE SWINGING THINGIE 2X

By Marshall Nealand

THERE'S LITTLE DOUBT AS TO WHICH COMPANY produces the most brisling looking 1/24 machines in the industry — just about any innocent bystander at your local raceway could tell you. It's Classic Industries, of course. Their futuristic "Manta Ray" started the whole routine, way back when. Since the "Ray," there have been many other exotic looking bombs that have sped under the back door of the Classic factory to wind up in remote places of the earth winning race after race. Each car seems to be a bit wilder than the last . . . until now.

I have truly seen it all, friends. The Classic "Gamma Ray" and "Serpent" shakes me to my socks! This swinging thingie twosome has absolutely nothing in common with the "Mean Manta," except the weird ability to evaporate down long straights and blast through sweeping Monza curves, like nothing else that has ever hit the slots!

Both cars are 1/24 scale ready-to-runs, and inlines, but that's where the comparison stops. The cars are so radically different that each one must be examined separately. Let's go

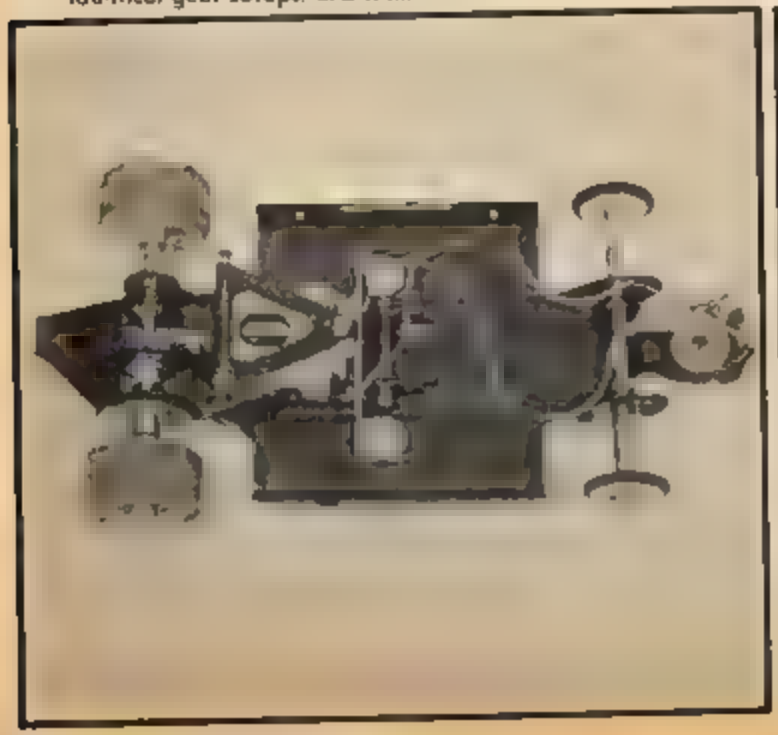
THE SERPENT

The Serpent sells for $12.98, a buck cheaper than its brother, the "Gamma Ray." You'll find many a pure speed feature when you're finally able to tear your eyes off that super-sleek vacuum formed body shell (which is prepainted a way-out green and violet) and flip the car over for a look-see at what makes this mother move! The chassis is built

If you dig way-out looks, backed up by meaty speed and smooth handling, here's a cosmic combo right up your orbit...hmmm(?)!

A remarkable pair of "Swingie Thingies!" In the foreground is the "Serpent," backed up by its brutish brother, the "Gamma Ray." Both are built very low, with excellent frontal penetration.

The chassis differ widely. This is the Gamma's pan frame. Front wheels rotate individually on both cars, while the rears are shod with 9/16" wide microcels. Both cars use identical gear setups, and final ratios.



The big feature of the Gamma Ray, however, is this fancy disc brake. The "A" frame is connected to this bell crank, which rides on the inside cover of the rotating brass "backing plate."

around a Classic CM-450, 3 volt motor. The main frame members are made of twin tubing, with a l-o-n-g drop arm that pivots from the same center line as the back axle.

The motor carrier is heavy-weight brass, a feature deemed necessary by Classic to hold down the frightening power that the motor is putting out.

All this power is shoved through a pair of sanded "microcell" rear tires, that are a full 9/16" wide, by 1" in diameter. Front wheels, on the other hand, are extremely narrow aluminum units, sporting "O" ring tires. The total diameter is 3/4". The front wheels rotate independently.

The front tread is 2-11/16", while the rear is 2-5/16". The wheelbase measures a giant 4-1/16"! Needless to say, the machine is very stable in the turns, with dimensions like these! The racing weight checks out at four ounces.

A "Classitron" 29 tooth crown, when teamed up with that eight tooth pinion, gives a 3.812.1 gear ratio.

THE GAMMA RAY

Unlike the "scratchbuilders" twin-tube frame, found in the Serpent, the Gamma Ray uses an aluminum pan frame, which holds a very hot CM-460, 3 volt motor, driving through a 29 tooth "Classitron" crown. The pinion is an eight toother, so the final ratio is 3.812 1.

The drop pickup pivots from directly in front of the motor, which makes it a full 2" shorter than the pickup arm used in the Serpent. Nevertheless, it's very effective. The shoe is the same used in the Serpent, a plastic unit with a 1/8" shank, topped with a brass, setscrew collar. Brushes are secured with screws.

Front wheels and tires are super-narrow "O" rings, the same as used on the Serpent. Rear tires are sanded "microcells," 9/16" x 1". The tread dimensions check out 2-11/16" front, and 2-9/16" at the rear – wider than the Serpent. Wheelbase is the same as its running mate, however – 4-1/16".

The racing weight of the "Gamma Ray" is four ozs. The body shell has probably the lowest functional frontal penetration angle in the business. Not only does that shovel nose reduce wind resistance to a minimum, it's great for pushing the competition out of the road if they spin in front of you!

But I've saved the best until last! The grand feature of the Gamma Ray is its disc brake! Fixed to the right rear side of the car, surrounding the rear axle, is the most clever disc brake design I've ever laid my eyes on. Classic uses the same principle they used on their "Stinger," the application of the motor's torque to perform some function in the car, thereby getting literally, "something for nothing." An "A" frame is screwed to the top of the motor, which in turn is free to pivot from side to side in a "rocking" motion. Attached to the back, right side of this "A" frame, is a bell crank which surrounds the disc brake backing plate. When the motor is running, such as during acceleration, the torque of the motor forces the motor to rock into such a position that the bell crank lifts away from the disc brake backing plate, thus allowing the axle to spin freely. But let up on the hand controller and the motor suddenly rocks back, when the torque stops, moving the bell crank so it pushes against the rotating backing plate. Sandwiched between the bell crank and the rotating backing plate is a disc, which acts as the brake shoe. The action is smooth – not like an "all off" or "all on" disc brake. In other words, the rear wheels don't lock up under braking, they merely stop smoothly and efficiently.

The entire system is simple and effective. My hat's off to the Classic engineers who dreamed this goodie up! What this brake does to lap records has to be seen to be believed!

The Gamma Ray goes for $13.98, that extra dollar no doubt being the price of the disc brake.

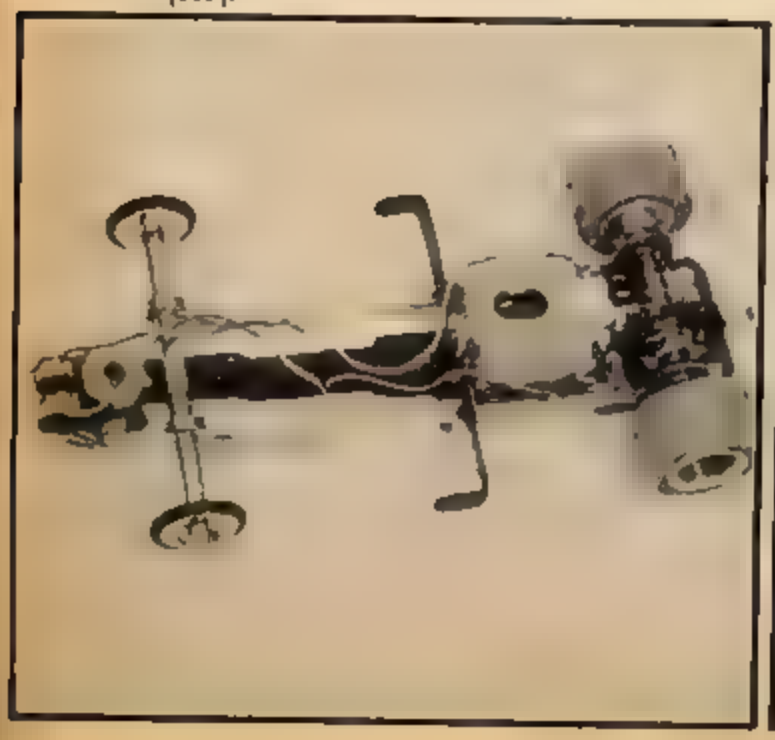
DRIVING IMPRESSIONS

Driving these two leech-like machines is a thrill indeed. Both are remarkably stable. The Gamma Ray seems more comfortable than the Serpent on extremely twisty tracks, not because of improved handling (they are both very similar) but because of the advantage of super braking from that disc. On a big-bore track the difference is less noticeable.

Naturally, with that 3.812:1 gearing, the acceleration and braking is phenomenal. Both motors kick out a prodigious amount of torque!

Summing up both cars as "unbelievable," it seems as though Classic has somehow managed to "one up" their competition once again!

The Serpent uses almost a "scratchbuilder" frame, with two tubes swept up to meet the brass front axle tube. The pickup arm pivots from the back axle. That's a CM450 (26D).



Both bodies mount to the chassis at three points. The Serpent uses screws, while the Gamma Ray body mount tabs simply slip through vents in the body.

Tired of slippin' and slidin'? Here's some self-help that can keep your mid-scale machine hanging onto the blacktop.

MAKE YOUR OWN 1/32 SCALE SUPER SPONGIES

These Riggen "Wide Track" biscuits, #762, priced at 59¢ a pair, are perfect for our use. You can get two 1/32 scale tires out of just one of these big skins!

BY RAY HOY

EVERY 1/24 SCALE RACING BUFF can tell you that the new closed-cell spongie tires are the hottest thing going, at the moment. What a pity they're not available for us 1/32 fans!

Wait a minute, why not make our own? That should be fairly easy. After all, you can buy the "biscuits" that are made by Riggen Tire & Manufacturing Co., in nearly any racing shop! Let's look into it

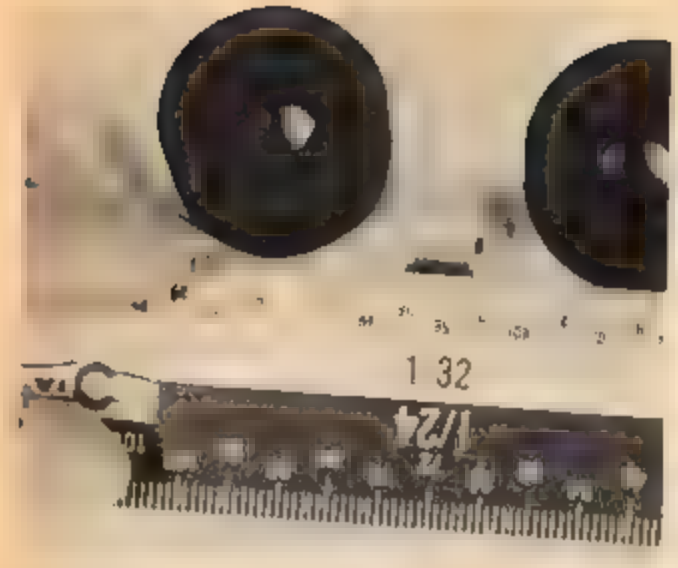
Buy the widest tires you can get. You will be able to get one pair out of just one tire, if you do so! That means you can shoe *two* 1/32 scale machines from one pair of the "wide track" Riggen sponge biscuits! A good deal for just 59¢, wouldn't you say? I prefer black, but grays are available if you like them. The black ones sell under part number 762, the gray ones under number 760. They're 1-1/8" in diameter, so you'll have to grind them down after you mount them

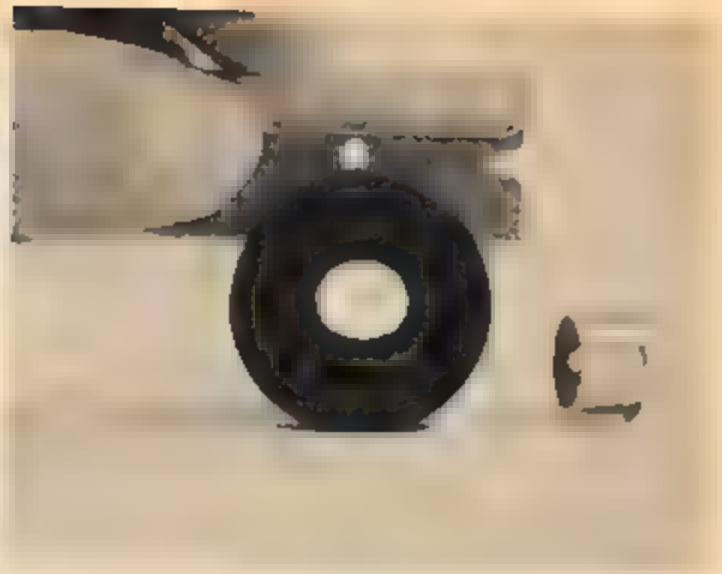
The beauty of using these tires, is the fact that you can mount them on any wheel you happen to own. One thing that bugs me about the wheel-tire combinations on the market, is that it's impossible to mount a proper wheel insert, because of the extra large diameter on the interior of the wheel. With this new method, you merely cut the tires to the proper width to fit *your* wheel, glue it on, grind it to the proper diameter, then insert the wheel disc in place and go racing!

The closed-cell "Super Sponge" tires take to a home track like a duck to water. They don't have that great sidewall detailing that the scale Monogram or Cox tires have, of course, but if you keep them black, they still look great, and they do provide much more urge to your machine!

Be certain the tire is sitting squarely on the rim, when the glue is still wet. When it dries thoroughly, grind the tire to the diameter you wish. Be certain you keep the grinding tool in the same plane as the face of the tire. You want a surface that is at perfect right angles to the sidewall when you are done, to avoid wheel hop. Round the outer edge of the tire a bit. A block of wood, wrapped in medium sandpaper, makes a good grinding compound. Do the finish sanding with fine sandpaper

Now that wasn't so hard, was it?

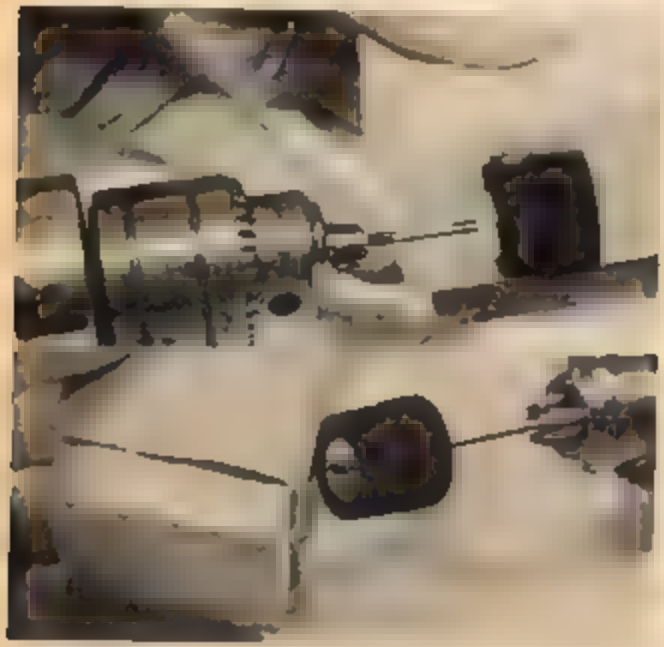




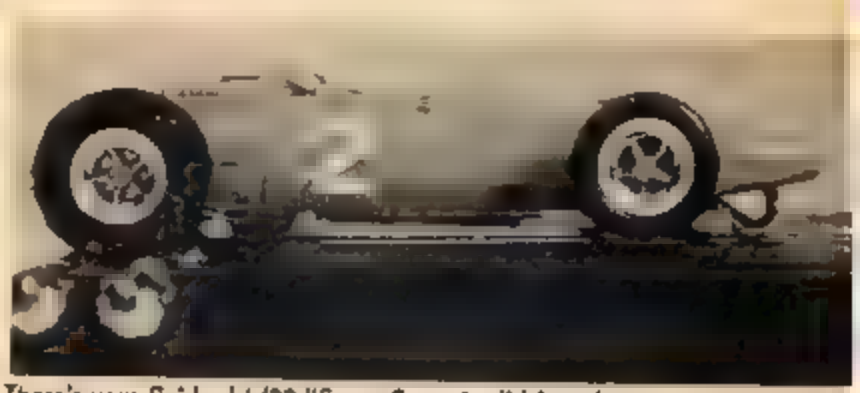
Measure the width of your wheel, then cut it with a razor blade or X-Acto knife. Keep the blade and tire perfectly vertical during the cutting process, in order to end up with true sidewalls.

An alternate way to cut the tires is to mount one on a wide, 1/24 scale wheel, fixed on an axle. Chuck the axle in a drill like this. Turn the drill on and hold the razor blade stationary and let the rotating tire do the work for you.

Glue the tires to the rims, making sure they're setting square. When the glue dries thread both wheels and tires on a 1/24 sidewinder axle. Use a jam nut on the inside of both wheels.



Use medium sandpaper for the initial cuts, fine for finals. Wrap it around a wood block. Keep the block on the same plane as the tire tread, so the sidewall and tread surfaces are at perfect right angles. Contour the outer edge of each tire by holding the block at an angle.



There's your finished 1/32 "Super Spongies." Man, they grab! And you won't find cheaper, and more effective spongies anywhere. A great modification for 59¢, especially when you consider the fact that you get two pair of 1/32 grabbers for the money!

HOT-N-FUNNY HEMI

Build an Asphalt-Eater for the slots from JoHans' Pu chritudinous Plymouth

A Funny Car is a dragster. Do you realize just what that means? First of all, friend it means that **technically talking** you can't race a Funny Car on a slot track. It simply isn't designed or intended for road course racing. Aerodynamically, it's all wrong for anything but straight line speed. Consequently, a Funny Car for the slots would be neither realistic nor practical. So there! Now, having said all that, let's try our hand at building one anyway . . . and if anybody asks why, just tell 'em we're suffering from a Funny Car hang up. After all, it may not be the ultimate in fast, but it will look something wild

There are a number of clear plastic bodies that will lend themselves beautifully to "F.C." detailing. However, I'm personally rather inclined to using some of the sharp looking static models . . . especially since they usually come with a flock of decals. One of the best for this kind of work is Jo-Han's '66 Plymouth kit.

To convert it into the "Hot-N-Funny Hemi," start by assembling and painting the body per kit instructions. Set it aside; you'll need it for a template in setting up the frame and motor assembly. The interior sections (front engine compartment, front floorboard section, and rear section) should now be cut out as noted to make room for the motor installation. After the parts have been cut to fit in an approximate stage, the construction of the frame should now be started

The frame was scratched from K&S tubing and required very little material. Mabuchi (600-A) supplies the power to the rear wheels through International ball bearings and a Wilson nylon crown gear. The rear engine mount was a Russkit product. It should be mentioned that all of these parts are purely optional and any likely combination would work just as well.

After the frame has been constructed and the wheelbase set up, attaching the frame to the body is next in line. Four small pieces of 1/32 tubing were used for the body mounts. When properly aligned, push four straight pins through the body into the ends of your mounts and the frame project is over

The application of the interior sections may now be finished and cut to fit the rest of your construction. A piece of poster paper (preferably black) may be cut to size to run from the back of the front seats to the edge of the rear window. This will cover the area of the motor and make the job a lot sharper looking. The roll bar that comes with the kit may be used by cutting the necessary holes in the paper and applying epoxy on the underside to hold the bar in place.

If you want to build a bit more realistic car, try altering the wheelbase. You can do this by trimming out the rear wheel wells ahead of the stock position about 3/8ths to 1/2 of an inch (whatever looks good to the eye). The kit comes with the standard wheelbase and is quite suitable really for our purposes. It's just a matter of what you like best. They run 'em both ways on the drag strips.

By Bob McCalla

There're are a number of advantages to working with clear plastic, but I'm still rather inclined to converting static kits. The most obvious reason is the high degree of detail; and this Jo-Han kit is stacked with what I like.

For power, my funny machine uses a big can Mabuchi, riding on a scratch tube chassis and a Russkit motor bracket. The crown gear is from Weldun and the rear ball bearings are from International.

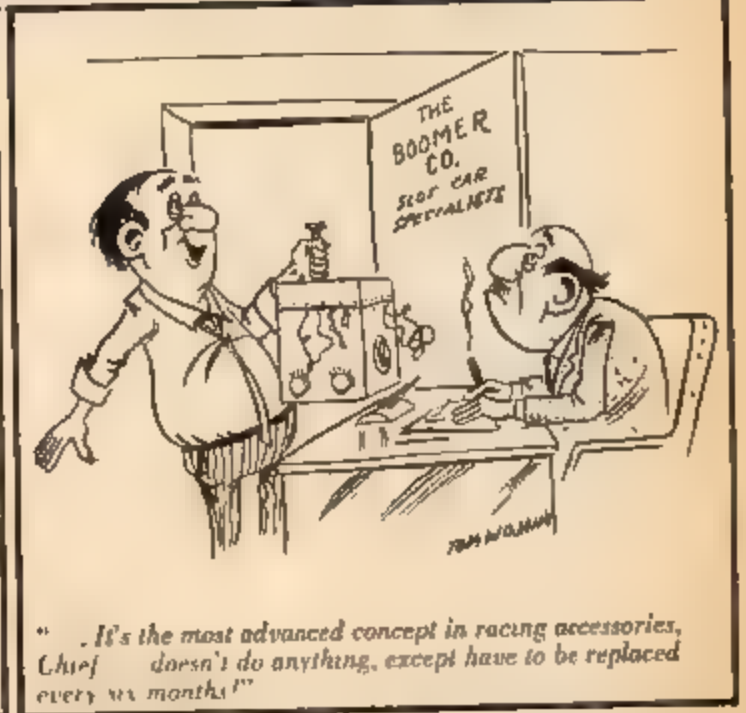
The kit interior and frame have to be modified to accept the slot conversion. This is a trial and error type operation, so trim away the unwanted material a bit at a time. The end result should look like this somewhat.

To alter the wheel base, for a truer Funny Car look, simply trim out the rear wells to about 3/8 to 1/2 inch ahead of the position.

OUT OF CONTROL

"Say, wouldn't it be weird if a guy could get car sick routin' a track . . ."

". . . Would you believe 187,476 non-stop, utterly revolting laps for a little plastic trophy



". . . It's the most advanced concept in racing accessories, Chief doesn't do anything, except have to be replaced every six months!"

"I assume you realize that nobody's going to believe this . . ."

". . . 'Member that chassis I had, Harve with the high center of gravity . . ."

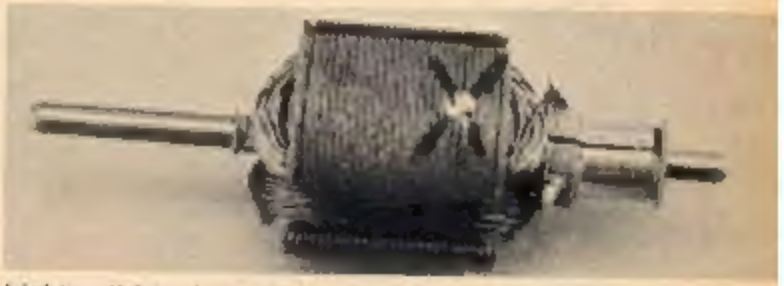
BALANCE YOUR ARMATURE FOR 98¢

WHO SAID INCREASED PERFORMANCE COSTS A LOT OF MONEY?

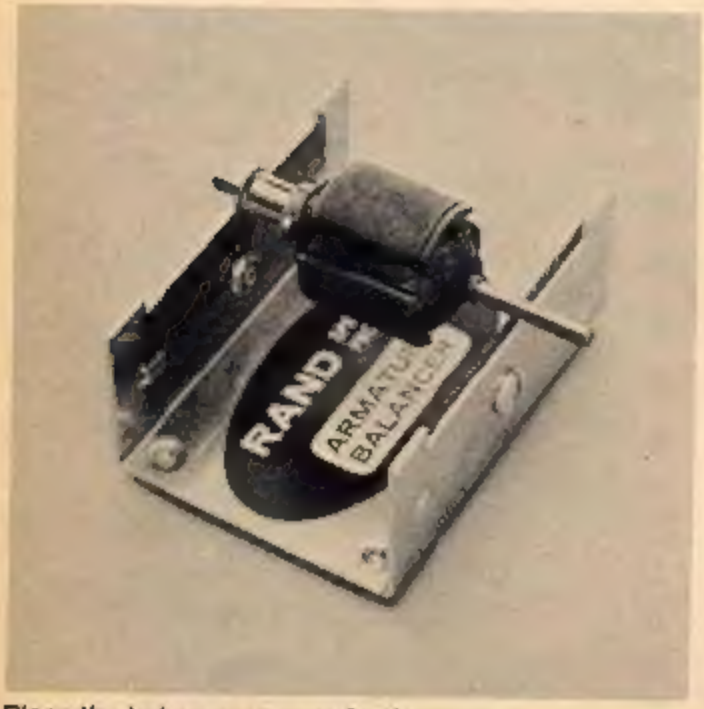
Here's good news for you serious racers! Rand Specialty Products, of Ridgewood, N.J., has just released an armature balancer, for only 98¢, and it works great! This handy little item should be available at your local raceway soon. If you dig rewinding, or if you just want to get the most out of your stock armature, the addition of this balancer to your "arsenal" will prove very worthwhile. ■

NOTE: The armature windings should receive an extremely light coat of epoxy, before the balancing operation. Too much epoxy has a tendency to trap heat, which could cause premature breakdown of the wire insulation.

Roll the armature gently along the blades several times, noting which pole comes to rest at the bottom. Mark this pole. This should be the heaviest one.



Lighten this pole by filing, or drilling a small balancing hole in the center of the pole, toward the commutator end.



Place the balancer on a perfectly level surface. Place the armature across the balancer's blades, so no part of the armature other than the shaft, touches the blades or balancer frame.

Place the armature back on the blades, and roll it again. Keep filing or drilling, until the armature does not stop on the same spot each time. It is sometimes necessary to remove metal from two poles, to achieve balance.

GIGANTIC ANNIVERSARY SALE!

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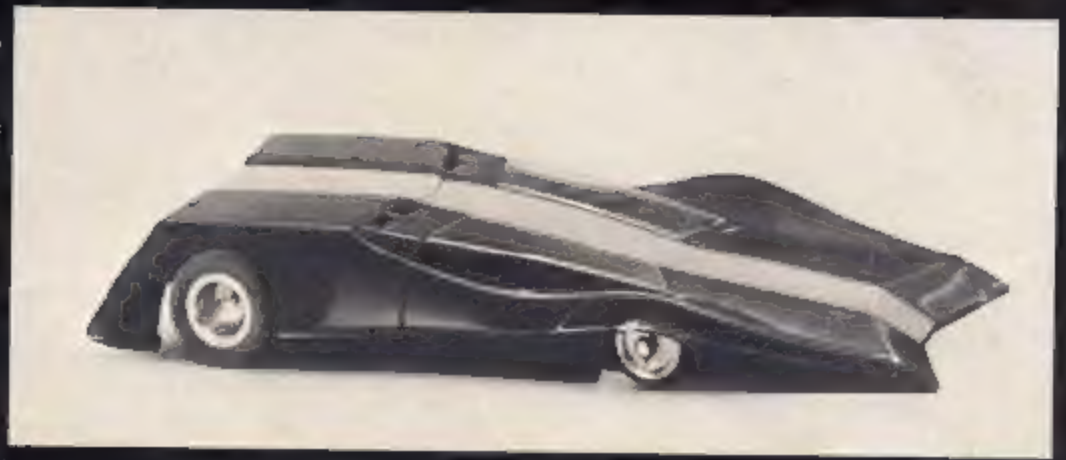

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